July 1979

# Smithsonian

Aboard sculpture 'Shaky Lady,' two pedal pushers pour it on in a wild and crazy race (p. 66)

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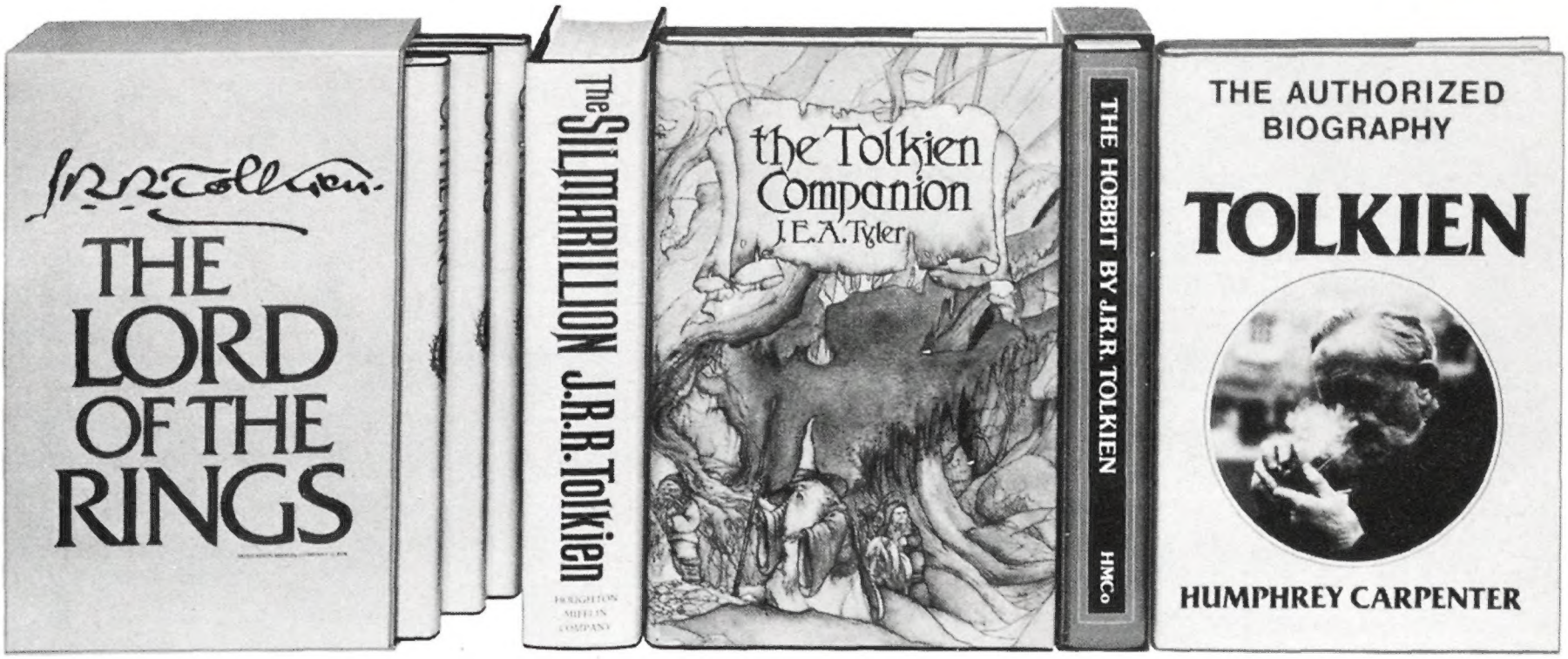


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*July 1979*

# Smithsonian

Volume 10, Number 4

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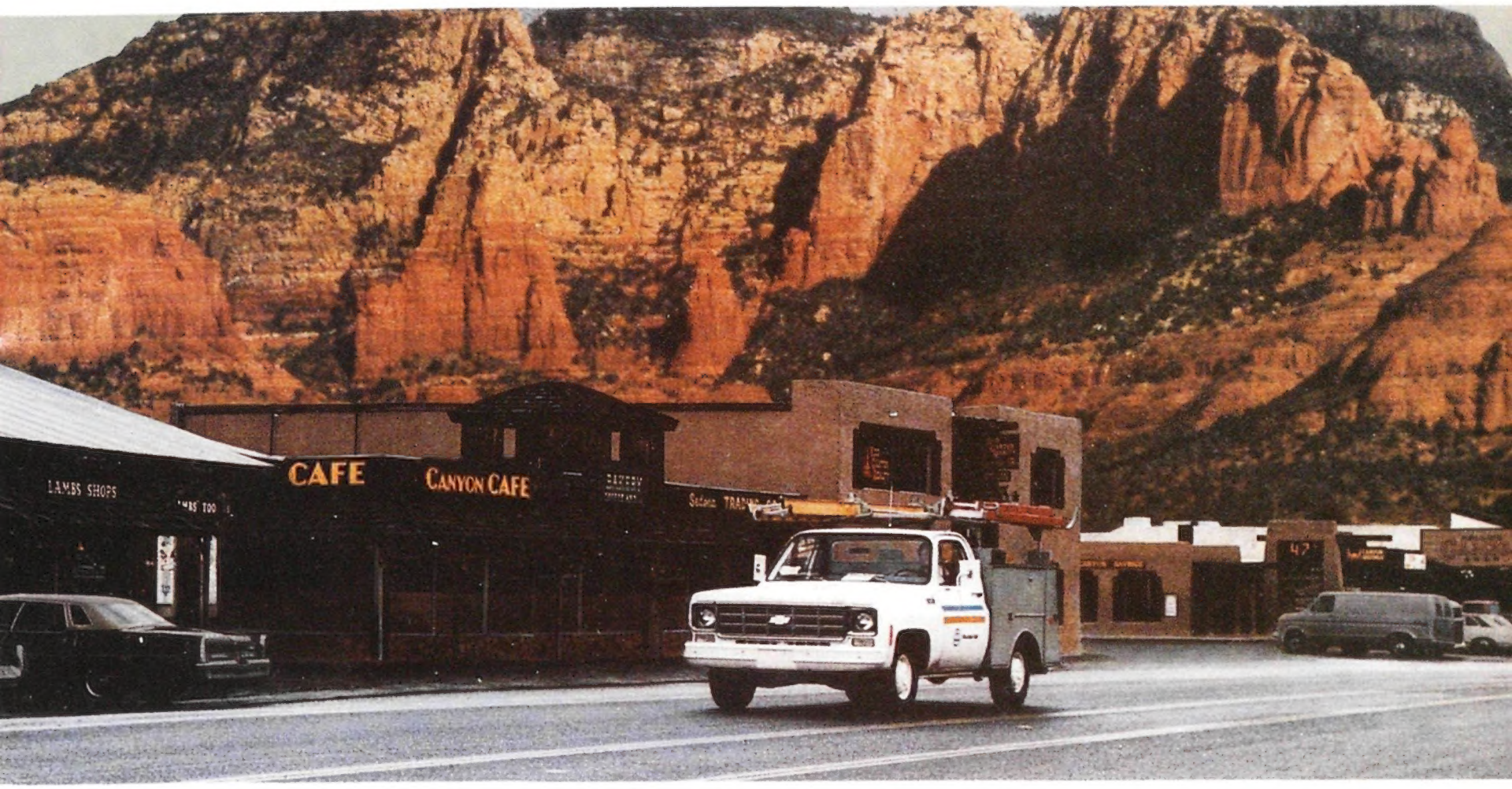


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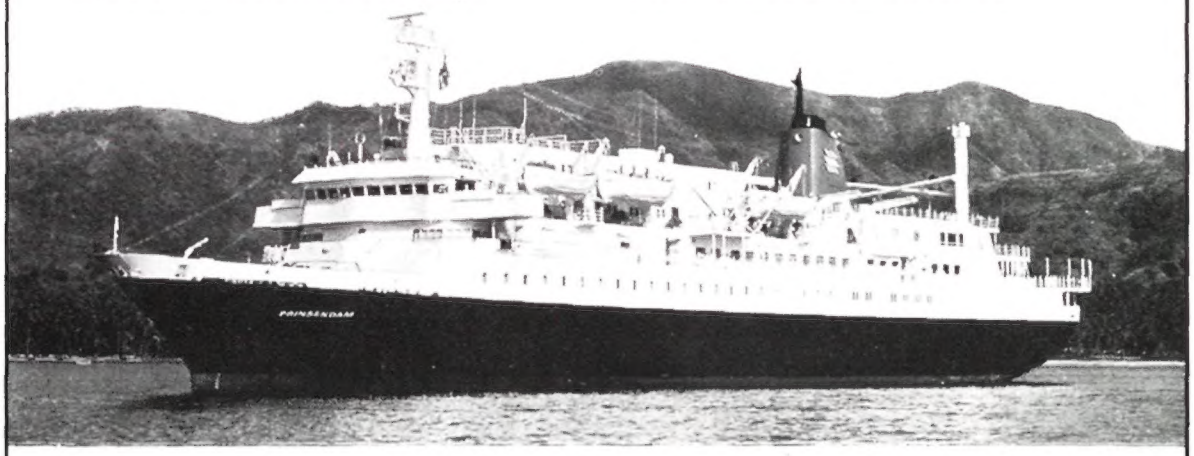

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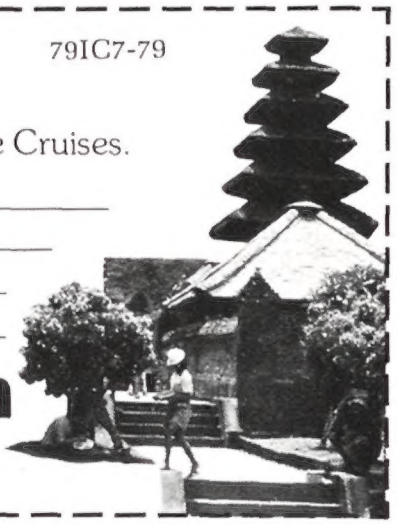


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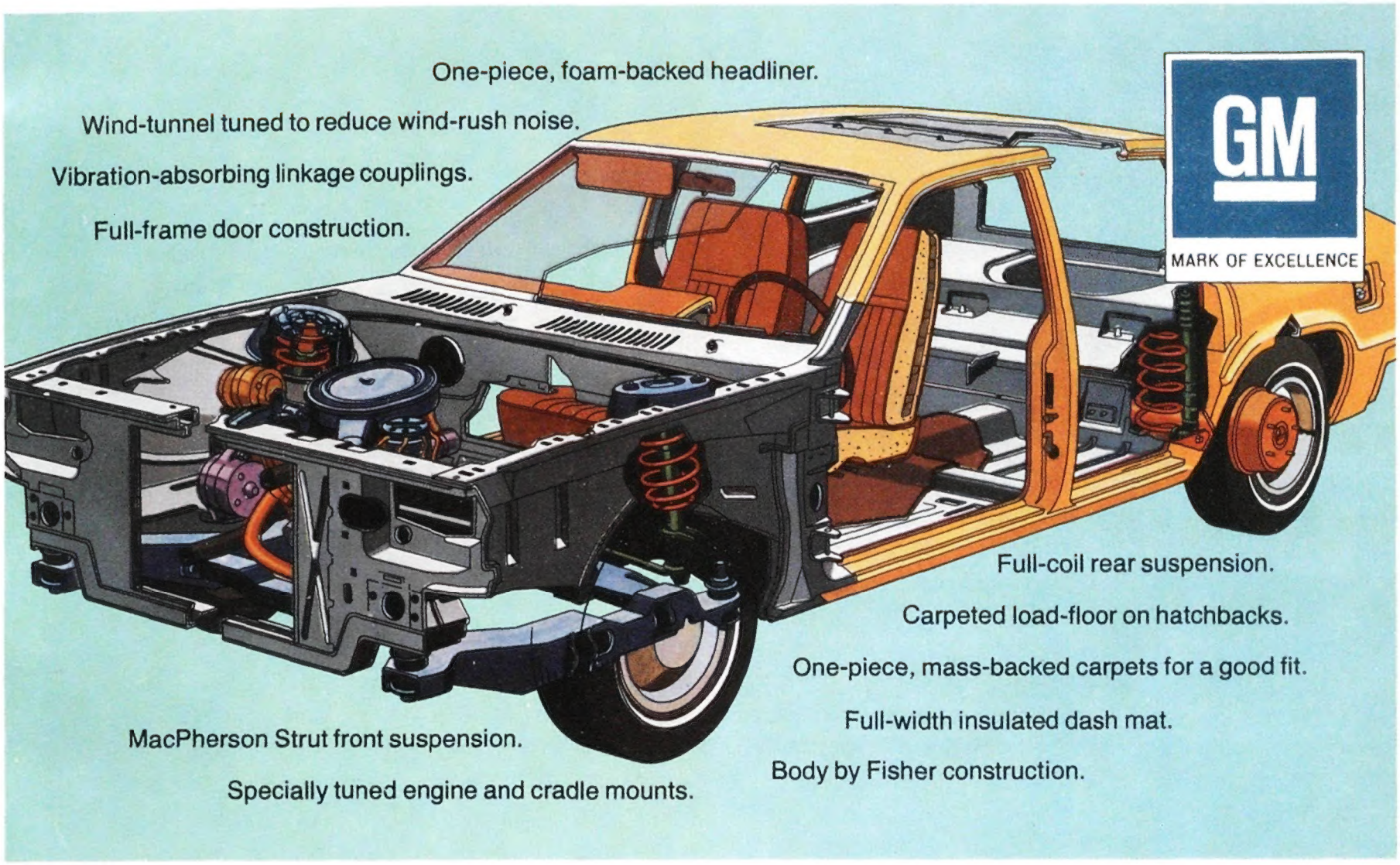


From the day the new Chevrolet Citation, Pontiac Phoenix, Oldsmobile Omega and Buick Skylark first started taking shape on the drawing board, a prime design objective has been to please the ear as much as the eye.

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*Secretary Ripley's comments*

# *The view from the castle*

*Sentiment is rising in South Asia to save the tiger, even among poor farmers who often see the big cat as a mortal enemy*

For three days last winter, some 150 tiger specialists met in India to determine the status of the Lords of the Jungle. It was a highly vocal group, including Paul Leyhausen, chairman of the Greater Cat Group of the Survival Service Commission of the International Union for Conservation of Nature and Natural Resources (IUCN); Saroj Choudury of the Similipal Tiger Reserve in Orissa, who lives (and sleeps) with his famous tigress "Khairi," now four years old and certainly well over 400 pounds in weight; the administrators of "Project Tiger," a conservation program in India; and delegates from the United States, Nepal, Thailand, China, Malaysia and Indonesia.

Papers were presented on every subject: how to count tigers by footprints, the pheromones (chemical odor signals) that affect male or female tigers, the composition of family groups, territory or home range, the prey species that tigers eat and how many a year are consumed, and so on.

The tiger as a subject continues to be a bit of a will-o'-the-wisp. One commentator suggested that the delegates were "chasing paper tigers." The problem raised in 1972 when "Project Tiger" began is no closer to solution: we still do not know how many tigers there are. Only in one small area, the Royal Chitawan National Park in Nepal, site of a Nepalese-Smithsonian research project partially supported by the World Wildlife Fund (SMITHSONIAN, August 1978), can we exactly determine the population.

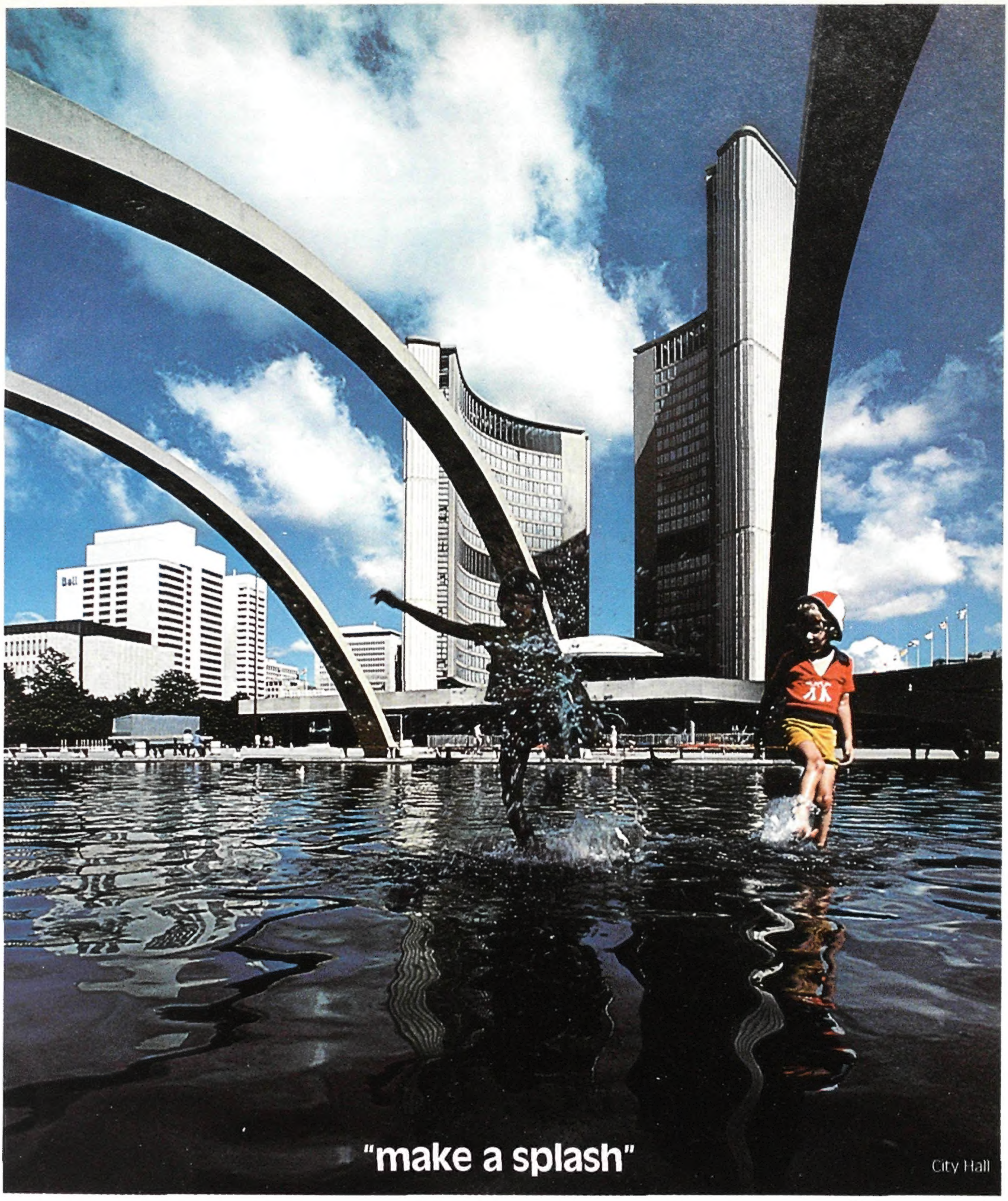
Elsewhere in the range of this species, information is of hearsay quality only, except perhaps in Java where we believe five or six animals remain. For the rest, with some skillful tracking and a bit of luck, a guess of 2,450 tigers has been offered.

What was encouraging in all this was the dedication exhibited by the delegates. There is no doubt that the symbolic conservation theme epitomized by the tiger and its plight has aroused great enthusiasm throughout South Asia. It is paradoxical to the Westerner that even in India and Nepal the sentiment for preservation of the tiger—mortal enemy of the owner of a pair of buffalo or other livestock—can be understood as a plea for the preservation of a vanishing way of life.

Tigers in some places, such as the coastal mangrove thickets of southeastern Bengal and adjacent Bangladesh, are renowned and feared as man-eaters. It is said that as many as 40 people a year may be killed in these areas. And yet there was no disposition to exterminate the tiger.

When careless development projects are stripping the land up and down the subcontinent, when money is being squandered on vast and often useless hydroelectric schemes, and when soil is being rendered barren by clear-felling of original forest, it is heartening to observe the beginnings of a conservation ethic. What is questionable, however, is whether the planners' level of consciousness can be raised sufficiently to make the connection in time. Will they realize that all their five-year plans are falsely budgeted? No one has yet managed to include in the budget equation the real, hidden cost—the rape of natural resources which can never be restored and on which alone the future economy of these countries depends.

S. Dillon Ripley

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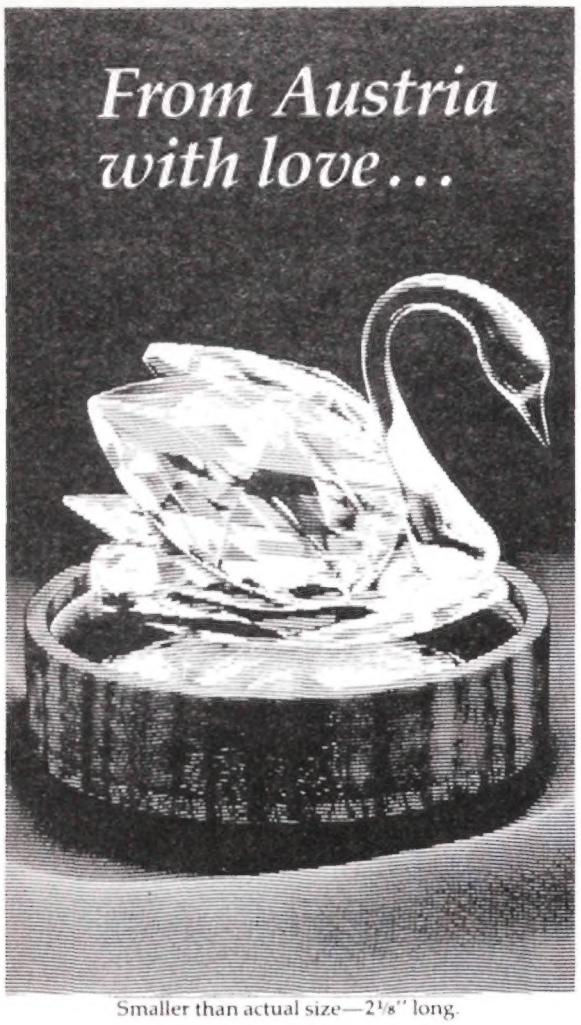


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# *Letters to the Editor*

## *Skylab*

Dear Sir: You could have knocked me over with a piece of Skylab when I read Everly Driscoll's article about reentry problems in your May issue. It was a shock to learn that Skylab was designed prior to 1971, without any way to control reentry. This life-and-death decision seems to me to be highly irresponsible.

It is to the NASA administrator James C. Fletcher's credit that he authorized a study that reduced the odds of being hit by debris from Skylab from one chance in 55 to about one chance in 120.

*Byron I. Zolin*
Wilmington, Delaware

*As NASA explains it, the current estimate is that "there is one chance in 150 of one person somewhere in the world being injured when Skylab reenters."* Ed.

## *Foxes*

Dear Sir: In regard to "Lives and loves of some sly foxes on Isle Royale," I find the author Durward Allen has a gift not only in photography but as a writer. His story about the foxes was charming, and the best part was "Little One's" moment of glory. My husband and I have had many pleasant chuckles and have enjoyed sharing the article with others.

*Carol Nagy*
Farmers Branch, Texas

## *Multiple Mirror Telescope*

Dear Sir: I think congratulations are in order to the Smithsonian and to the University of Arizona for the new breed of optical telescope, for what I'm sure will be a major contribution to the further knowledge of our cosmos. The MMT is beautiful in structure and intriguing in purpose. The photographs of the building alone were fascinating.

*Cherie M. Stevens*
Newport, Rhode Island

## *Phillips Collection*

Dear Sir: The captions accompanying two of the photographs in your article on the wonderful Phillips Collection are in error. The photograph described as Ryder's *MacBeth and the Witches* is actually *To the Rescue* by Winslow Homer, and the painting described as Goya's *St. Peter Repentant* [see below] is Cézanne's *Self-Portrait*.

For those of us who consider the Phillips the most enjoyable of Washington's great art museums, the news of its financial troubles is distressing. I'm sure that those of us who enjoy the Collection frequently would be more than willing to help share the burden of upkeep—if we were asked. The Phillips has been too generous for too long—and too slow in asking for help.

*Peter G. Koltnow*
Bethesda, Maryland

Dear Sir: Benjamin Forgey mentions Renoir's *Luncheon of the Boating Party,* which is prized by the Phillips Collection more than most people know. It seems that the art dealer Lord Duveen, who sold so many paintings that now hang in our own National Gallery, once attempted to buy this work in order to give

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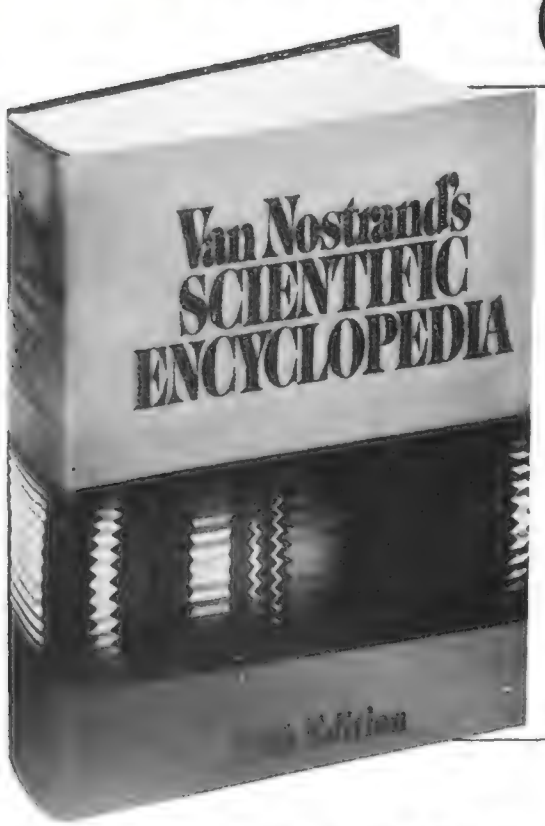


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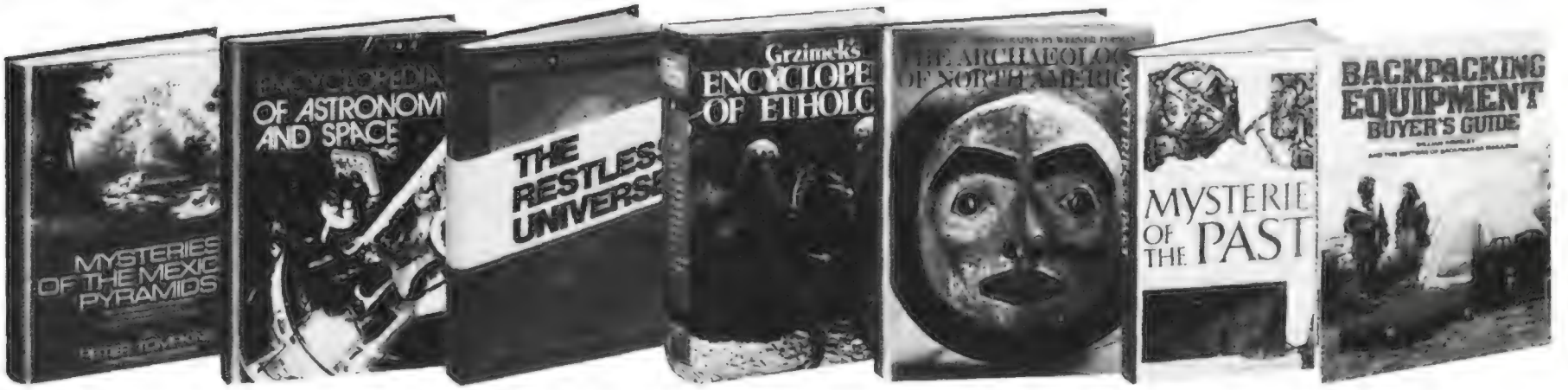


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it to the National Gallery in London. He offered Duncan Phillips a blank check and told him to name his price. Fortunately, the offer was refused.
*Bill Maloney*
Butler, Pennsylvania

Dear Sir: When I was new to Washington, the Phillips gave me my first exposure to great art. I met El Greco there in his *Repentant Peter,* and I stopped by often to see this portrayal and contrast it with the *St. Peter Repentant* by Goya.

I enjoyed thinking about them, so I wrote about them and sent my piece to a Washington newspaper. I had written it in May or June, and one Saturday in August I saw it in print, unchanged except for one small addition. I thought, "why did that little guy with the blue pencil have to throw *that* in?" I had written that the two paintings hung in the same room, or did the last time I saw them—and the editor had added "which was several days ago." The statement could not be correct, because the Phillips, at that time, always closed for the summer.

A few days later, I received a letter from an angry man from New York. He had been in Washington for a week on business, that Saturday morning had read my article and decided to delay his departure to go to the gallery, only to be brought up short by the notice that it was closed for the summer. And he suggested to me in no uncertain terms that I be more accurate in the future.
*Hazel O'Hara*
Washington, D.C.
*Since 1941, the Phillips has been open year-round.* Ed.

Dear Sir: In his piece celebrating the Phillips Collection, Benjamin Forgey mentions the mystical abstractions painted by Augustus Vincent Tack. Once, years back, I tagged along as curator James McLaughlin led a group of retarded teen-agers through the Collection, sharing his knowledge of the paintings and his pleasure in them. At first glimpse of a mural by Tack, one boy blurted out a long loud admiring "Ohhh" and added, "It's something that will go on forever and never stop." I can't remember if McLaughlin just stood there enjoying the painting with the boy or if he also told him its title: *Aspiration.* Another Tack close by was *Time and Timelessness.*

McLaughlin spoke with as much care and feeling as if he were showing the Collection to esteemed colleagues from Paris. At the end, he was sorry that the teachers set a one-hour limit on the visit.
*Peggy Thomson*
Chevy Chase, Maryland

## *Butterfly ranching*

Dear Sir: As a butterfly collector, I read with intense interest Noel D. Vietmeyer's article on butterfly farming in Papua New Guinea. Please send me an address to contact in regard to securing some specimens from Papua New Guinea.
*Janice Logan*
Fayetteville, Tennessee
*For Mrs. Logan and the many others who inquired, we offer the following addresses, supplied by the Embassy of Papua New Guinea: Insect Farming and Trading Agency, Box 129, Bulolo, Morobe Province, Papua New Guinea (for purchasing butterflies); Insect Farming and Trading Project, Wildlife Division, P.O. Box 2585, Konedobu, Papua New Guinea (for a booklet about butterflies).* Ed.

## *Wilmarth Lewis*

Dear Sir: I have never written to protest sexual slurs before. Considering, however, the size and quality of your audience, and buoyed by the thought that I, too, have graduated from Yale (PhD 1974), I must draw your attention to an unfortunate but revealing remark in your article, "Can he be the real Walpole or is he Wilmarth Lewis?" In reference to future visiting scholars at Farmington, you quote Lewis as saying, "We can put up a few people—half a dozen men and their wives. . . ." It is understandable that Mr. Lewis might entertain outdated views on the unlikelihood of women scholars (and their husbands?), but I am saddened that your editors have allowed such a statement to reach print.
*Virginia C. Raguin*
College of the Holy Cross
Worcester, Massachusetts

## *Around the Mall and beyond*

Dear Sir: In Edwards Park's write-up of his rugged trip to Mount Hopkins to see the new telescope, he was mystified by the "trk" he saw bearing the name "Petrocelli." Presumably the truck was so-called in fond remembrance of the television program of the same name, which was produced by NBC and filmed in Tucson, Arizona. As an actor living in Arizona in 1974-75, I appeared in the series. If there ever is a rerun, I may be seen in a courtroom scene or smiling from behind a saguaro.
*Jeremy Gage*
Washington, D.C.

## *The Peale family*

Dear Sir: In regard to my article, "The Peale family: a lively mixture of art and science" in the April issue, I would like to make it clear that the publishers of the microfiche edition are Kraus-Thomson Organization Ltd., not the National Portrait Gallery. The Peale Papers project of the National Portrait Gallery, working under a grant from the National Endowment for the Humanities, had prepared the papers for publication and compiled a guide and index to facilitate their use. Kraus-Thomson has been responsible for arranging for the actual photographing of the papers, the printing of the guide and index, and the distribution of the collection in published form. Since many SMITHSONIAN readers have written asking about the microfiche edition, please tell them information concerning it may be obtained from KTO Press, Millwood, New York 10546.

The Peale Papers staff is now at work editing and annotating eight volumes of "Selected Letters of the Peale Family," which will be published by Yale University Press beginning in 1980.
*Lillian B. Miller*, Editor
The Charles Willson Peale Papers
National Portrait Gallery
Washington, D.C.

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# *Phenomena, comment and notes*

*Six days that didn't shake the world: how a nuclear crisis was managed by 'a gaggle of NRC Commissioners'*

"As the Three Mile Island situation developed beginning on Wednesday, March 28, the Commissioners met to discuss the nature of the event. . . ."

With these bland words we are made privy to a momentous discussion, an emergency meeting of the U.S. Nuclear Regulatory Commission (NRC) during the nation's first nuclear fright. The five commissioners—Chairman Joseph Hendrie, Victor Gilinsky, Richard Kennedy, Peter Bradford and John Ahearne—were technocrats whose time had come, nuclear engineers and physicists out of Columbia, Princeton and CalTech, an administrator out of the Harvard business school and a lawyer out of Yale. Their discussion went on behind closed doors for six days, during which the men did not appear able to decide what to do about a nuclear accident that couldn't happen, but did. The worst failed to happen at Three Mile Island, to everyone's relief, but behind the NRC's closed doors considerable core damage was inflicted on the credibility of the commission and the entire regulatory process.

The 800-page transcript of this marathon meeting, made from tape recordings and released under threat of Congressional subpoena, is a remarkable portrait —in their own words—of men who were confronted with cosmic forces and talked about them as a committee of plumbers might discuss a faucet leak with interesting complications.

In the heat of discussion their language often lapsed into engineering jargon. They talked about the escape of radioactive fission products and the spills of "hot" coolant as a matter of toots, puffs, burps and slurps. When they were baffled by the nature of the accident, they yearned for one they could understand: What we need, one commissioner blurted out, "is a good pipe break."

Their biggest plumbing problem was the gas bubble that kept water from cooling the top of the damaged nuclear core. In a call from Three Mile Island, Roger Mattson, Nuclear Reactor Regulation (NRR) chief of systems safety, told the commissioners what they might expect if pressure in the core were lowered. His monologue suggests an engineer confronting the inconceivable:

MR. MATTSON: That bubble will be 5,000 cubic feet. The available volume in the upper head and the candy canes, that's the hot legs, is on the order of 2,000 cubic feet total. I get 3,000 excess cubic feet of noncondensibles. I've got a horse race. . . . We have got every systems engineer we can find, except the ones we put on the helicopter, thinking the problem: how the hell do we get the noncondensibles out of there, do we win the horse race or do we lose the horse race. . . . It is a failure mode that has never been studied. It is just unbelievable.

The commissioners themselves were often at a loss for facts, and not sure whether to believe the facts they did have. At one point Commissioner Ahearne asked about a hypothetical accident "scenario," leading to this short exchange:

COMM. AHEARNE: How similar to that is what we have here?

COMM. GILINSKY: Why are you looking at me?

Again and again, the transcript reveals the imprecision in what one would assume to be the clear-cut facts of science and engineering. At one stage, working with several independent teams of experts "to avoid getting caught in errors in assumptions or arithmetic," the commissioners were concerned about a percentage problem: if three percent of the bubble was oxygen, what percent oxygen would have to accumulate for it to combine with the hydrogen to cause a "blip" —an explosion that might, at worst, make a small part of Pennsylvania uninhabitable because of radioactivity for decades?

Chairman Hendrie reported that, according to the experts' calculations, the "detonation limit" was high enough so that three percent oxygen posed no immediate problem. This raised a question in one commissioner's mind:

COMM. BRADFORD: Joe, just one other thing. What are the uncertainties in the various numbers like the three percent?

CHAIRMAN HENDRIE: I think there's a fair amount of slop. I think you have to regard it as being a fair amount of slop.

The slop problem continued to haunt the commissioners, as they discussed other issues. By Sunday morning, they were trying to decide when an evacuation should be "triggered" if things got worse at the plant. The NRR assistant director for systems safety brought in the draft of a plan, drawn up by the staff, which he didn't fully understand. The plan mentioned an eight-hour period before evacuation, which he couldn't explain:

DR. HANAUER: If eight hours—let me try and say it as well as I can. Again, as I say, I'm really not an expert on this. (*Simultaneous discussion.*)

DR. HANAUER: Yeah, it's not a crystal-clear concept to me.

COMM. AHEARNE: It's not clear—

DR. HANAUER: Now, it may well be that the people who invented it understand it a whole lot better. I sure hope so.

Knowing as little as they did, the commissioners gave an unseemly amount of attention to public relations, engaging in lengthy discussions of what to tell the public, and how to hide from the press.

On the first afternoon Commissioner Kennedy, having retreated to his office to eat a sandwich and go through "a bunch of press releases that we have been getting by the bushel-load," burst through the closed doors to tell the other commissioners that the radio was reporting that the NRC thought there was a risk of a meltdown. The commissioners, seeming more worried about the report than the risk itself, went to work at once on a press release to reassure the public. With a hasty draft in hand, they began to rewrite it:

CHAIRMAN HENDRIE: Do you want to stick around and engineer a press release?

COMM. KENNEDY: Sure. . . .

CHAIRMAN HENDRIE: OK. We start out

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and say the Chairman of the NRC said this afternoon that contrary to some media reports there's no imminent danger of a core meltdown of the Three Mile Island nuclear plant, period.

COMM. KENNEDY: Splendid, then I would go right along. . . .

COMM. AHEARNE: I guess what you're saying is that you want to be very positive to Congress mainly because—

CHAIRMAN HENDRIE: Yes.

COMM. AHEARNE: Clearly the fuel rods are in a situation—

COMM. KENNEDY: It says that, it says that there's evidence of severe damage to nuclear fuel. . . .

COMM. AHEARNE: The whole flavor is very optimistic and I—

COMM. KENNEDY: I don't think its optimistic. It just says we're working hard. Which happens to be the case. The focus, I think, has to be reassuring—reassure people that at least we're working on it.

After rearranging a few paragraphs—moving mention of "intermittent releases" to the final paragraph—the commissioners were almost satisfied, but Ahearne was still troubled:

COMM. AHEARNE: Let me make one last plea—down here where you finished releasing, you go on to say several options. I think it would be technically a lot better if you said—something about there's a possibility—it's small, but, it could lead to serious problems.

COMM. KENNEDY: Well, you've got to remember that's the only thing out of the press release they [the press] will then take out.

COMM. AHEARNE: Well, Dick, we've been sitting here for the longest time telling them everything's fine. It's a real struggle, with what to do. There's none of that flavor here. And I realize you're counterbalancing.

COMM. KENNEDY: Well, I understand what you're saying. . . . You could put a little sentence in right there . . . to say, were this—in the unlikely event that this occurred, increased temperatures would result and possible further fuel damage. OK? Then say several options are reasonably considered. OK?

COMM. AHEARNE: That's the type of core melt distraction—

COMM. KENNEDY: Yes, I think—that doesn't trouble me if you could get enough of the qualifiers in to get it back to where it was in the opening sentence.

The press release was sent out, but by the next morning the public relations experts were urging the chairman to talk to the press. "They say that just your appearing would have a calming effect," an aide advised. "It generally leads to dismay," the chairman retorted.

Chairman Hendrie decided to go from his office on H Street in Washington to the NRC's Response Center in Bethesda, Maryland, where the press was gathered, and asked if the others wanted to come. They didn't:

COMM. KENNEDY: If they see the whole crew of commissioners there, they will look the next time for where they are going to find the whole crew of commissioners and they are going to find that that is on H Street.

CHAIRMAN HENDRIE: A pride of commissioners?

COMM. KENNEDY: A pride. *(Laughter. Simultaneous discussion.)*

CHAIRMAN HENDRIE: A gaggle is good. A gaggle of commissioners met this morning!

The commissioners were still in high spirits when, minutes later, the NRC lawyer Leonard Bickwit entered the room. The margins of the transcript bear this annotation: "10:56 A.M. Bickwit arrives with a McDonald's bag."

CHAIRMAN HENDRIE: You come prepared to share Egg McMuffin, I trust.

MR. BICKWIT: It's too late for Egg McMuffin.

COMM. AHEARNE: That's all right, we'll share whatever you have. A Big Mac?

CHAIRMAN HENDRIE: He's got a thick chocolate malt and 12 straws. *(Laughter.)*

CHAIRMAN HENDRIE: In one enormous schlurp the whole thing disappears!

A chocolate malt wasn't the only thing that was threatening to disappear in one enormous schlurp, at that particular moment in history. It appeared that there was a possibility of a hydrogen explosion, and the next day the commissioners discussed it with a technical expert:

COMM. BRADFORD: Let me say it this way, there's not much chance of a harmful explosion, that we're not prepared for. . . .

MR. BUDNITZ: There is no such thing as a harmless explosion. At least, you had better not count on that.

Throughout their discussion, the commissioners kept returning to the question of evacuating people: how long does it take? As Commissioner Gilinsky asked one aide, "Do you know what plans they might be exercising, or is it sort of everyone on his own, jumping into his car and clogging the highways?"

Another aide reported that an evacuation could be accomplished in an hour, provoking this exchange:

COMM. BRADFORD: Do you know that estimate to be 10 miles, 15, 20?

MR. GRIMES: No, but we can think about walking. The brisk walking pace is three or four miles per hour. . . .

In the end, it was easier for these men to think about walking, briskly, away from a nuclear nightmare than to talk about the reality of what was happening.

Toward the end of their marathon meeting the commissioners turned to the "post-mortem" problem, or who should investigate what happened. Commissioner Kennedy suggested the ideal forum would be a panel of the National Academy of Sciences. Commissioner Ahearne, however, put in a bid for the National Academy of Engineers, rather than the scientists:

COMM. AHEARNE: Why do you go to NAS instead of NAE?

COMM. KENNEDY: Well, I don't know. Maybe there are some issues here that extend beyond engineering discipline.

By the time they got around to discussing the post-mortem problem, the power plant at Three Mile Island was starting to cool off. The bubble was gone, although the commissioners were no more sure of why it had gone than why it had formed. But the English language was about to suffer a meltdown. It happened on the next to the last day of the meeting as the commissioners were discussing whether or not to write a letter to the President, endorsing his call for a full investigation of the accident, or to telephone the White House instead:

CHAIRMAN HENDRIE: You know—we either ought to decide we're not, or we are; and if we are, here's what we're going to say, right? Or, we're not going to issue some other kind of statement or whatever, we'd better decide what that will be. Otherwise, we're sort of just sitting here mumbling as events move on.

—PAUL TRACHTMAN

# BETWEEN THE HUSTLE AND THE BUSTLE, SQUEEZE IN SOME REFRESHMENT.

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Photographed by Collins, landing module of Armstrong and Aldrin returns from moon to dock with *Columbia*. Beyond, Earth rises comfortingly into view.

# *Around the Mall and beyond*

A decade ago this month, astronauts Neil Armstrong and Buzz Aldrin became the first earthlings to step onto the moon's surface. We have a special, personal interest in the Apollo 11 anniversary because the third man of that crew, Michael Collins, is the Under Secretary of the Institution, having achieved that position after many productive years as director of our National Air and Space Museum. Ten years ago, Mike orbited the moon in the command module while his two comrades took the landing module down to the moon's surface.

Mike told his story in his book, *Carrying the Fire,* which came out in 1974 (SMITHSONIAN, July 1974). Recently I got out my own thumb-marked copy of this extraordinary book and read the Apollo 11 stuff again (and quite a lot of other stuff, because once you start you keep on).

I found a bit that I remembered liking the first time around, and still do. It deals with the time of Mike's first aloneness in his craft, *Columbia*, after the landing craft with Armstrong and Aldrin (it was named *Eagle,* remember?) has left for the lunar wilderness. The eyes of the world are on those two—not on Collins. He swings off in his orbit, heading for the dark side of the moon where he will lose radio contact with Houston and all the rest of Earth. He will be, quoting from the book, "absolutely isolated from any known life. I am it. If a count were taken, the score would be three billion plus two over on the other side of the moon, and one plus God only knows what on this side."

Streaking along in solitude, Mike does his housekeeping aboard *Columbia*: "I have turned the lights up bright, and the

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cockpit reflects a cheeriness which I want very much to share. My concerns are exterior ones, having to do with the vicissitudes of my two friends on the moon and their uncertain return path to me, but inside, all is well, as this familiar machine and I circle and watch and wait. I have removed the center couch and stored it underneath the left one, and this gives the place an entirely different aspect. It opens up a central aisle between the main instrument panel and the lower equipment bay, a pathway which allows me to zip from upper hatch window to lower sextant and return. The main reason for removing the couch is to provide adequate access for Neil and Buzz to enter the command module through the side hatch, in the event that the probe and drogue mechanism [the normal docking device] cannot be cleared from the tunnel. If such is the case, we would have to open the hatch to the vacuum of space, and Neil and Buzz would have to make an extravehicular transfer from the LM, dragging their rock boxes behind them. All three of us would be in bulky pressurized suits, requiring a tremendous amount of space and a wide path into the lower equipment bay. In addition to providing more room, these preparations give me the feeling of being proprietor of a small resort hotel, about to receive the onrush of skiers coming in out of the cold. Everything is prepared for them; it is a happy place, and I couldn't make them more welcome unless I had a fireplace. . . ."*

The National Air and Space Museum, whose new building Mike Collins practically midwifed and certainly nursed through babyhood, is taking note of the Apollo anniversary later this month in various ways. There will be an Apollo 11 exhibit (see "Smithsonian highlights"); there will be a commemorative book of essays about the moon landing. And, on the night of July 20-21, the old ABC coverage of the event will be replayed at the museum as it stays open until an unprecedented 1:30 A.M. Coffee and doughnuts will be served up—along with memories of a national triumph that seems, somehow, far more remote than just ten years ago.

We badly need that reminder of a younger, more gallant time. But in this column we are perfectly happy to remember the landing on the moon in terms of a small hotel and two chilled skiers.

Collins and the other astronauts agree that nothing in the universe is more beautiful than Earth, green-blue and cloud-flecked, seen from space. Fortunately, there are still a couple of places down here on Earth's surface where the beauty holds up, even under close focus.

One of these is the Smithsonian's Chesapeake Bay Center for Environmental Studies. It is misleading that a branch of the Institution bearing such a formidable title should also be an exceptionally beautiful place—2,600 acres of fields, forest, marsh and other land forms maintained as close to original wilderness standards as possible.

This year the center has been the site of an intensive educational program. Children have explored the trails and estuarian mud flats and waterways, partly in hip boots, partly by canoe, discovering aspects of ecology. Some programs involved overnight stays. One weekend families went to Poplar Island, which we wrote about back in December 1971, when it seemed certain to be washed under the waves by natural erosion (it still does, by the way). I chose to attend an introduction to ecology for preschool children on a Tuesday in May when the great, tall trees were newly leafed and the undergrowth smelled damp and fresh.

These preschoolers range from three to five and must bring along a parent or two when they go to the center. It's not that they need the slightest supervision other than that which their instructor, Ann Coren, is able to provide. But mothers and fathers need a little brushing up on the basic theme of the ecology course, which is best described as getting intimate with nature.

There are children today who are

Moment of discovery at the Chesapeake Bay Center.

*A selection from *Carrying the Fire* by Michael Collins. Copyright © 1974 by Michael Collins. Reprinted with the permission of Farrar, Straus & Giroux, Inc.

*Announcing*

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*by Peter Barrett*

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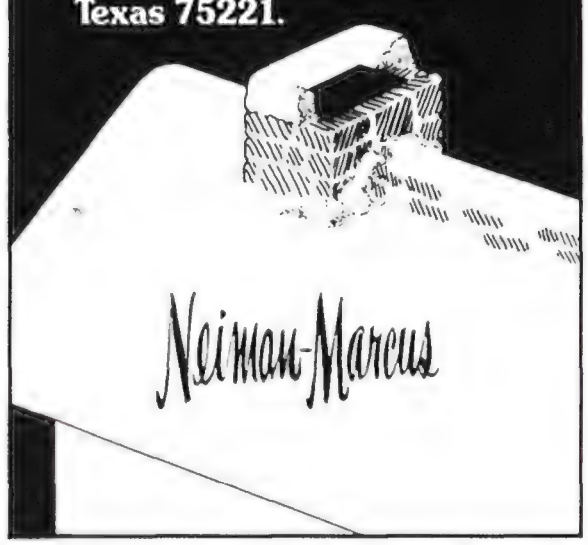

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lucky enough to live rurally. They can wander through fields and woods and wade in brooks and get damp and lost and grub in the dirt and watch ants and get stung by wasps and pick flowers and get sunburned and tired. This way they learn more or less where they belong in the world, along with all those other things. That's ecology.

Unfortunately, an awful lot of children do not experience nature firsthand except in groups such as the one I joined. These weren't deprived inner-city kids. They live on streets that have backyards, and if the grass turns brown they know it will be resodded, and if a tree dies a truck will come and yank it out and slap in another one that may or may not live.

So at the center they explored five different habitats—forest, field, creek, marsh and estuary. In the forest they found things that were sharp and smooth and round and hard and soft. In the fields they shook bugs off blades of grass and caught them. I was there on creek day, along with nine kids and nine mothers and one baby and Ann Coren. They all wore boots and old clothes and they squished along the muddy banks of a little creek between two weirs where the center's scientists take samples of water to see what's going into this continent's biggest estuary—Chesapeake Bay.

Each child carried a small net and a bottle and a tiny specimen box and a magnifying glass. They looked for live things and dead things and growing things. I was shown some spiders and plants and a soggy caterpillar who must have been very glad when we all left. Ann didn't identify anything unless she was asked. The idea was to get your eyes open, not learn names. Also to have fun. There's that odd Smithsonian concept again: learning should be fun.

A boy named Marshall fell into the creek twice, and his mother didn't panic or anything. A girl with curls sat down in the middle of the creek and no one minded. We came ashore and Ann read aloud about a frog. Everyone got Popsicle sticks and colored them with crayons and raced them downstream while someone waited at a weir to catch them because you mustn't litter.

Mine was orange and green and named *FLASH,* and it foundered in a backwater and was rescued by a boy with "32" on his football jersey. He was, of course, awarded it under the laws of salvage.

Films are big now at the Institution. No sooner had I been through the new one at Air and Space than I was bustled off to a showing of a little 30-minute film that was really two films in one. One of these was about Jimmy Doolittle, the flyer, and the other about a funny, old-fashioned firm that makes patent medicine. So what have they to do with the Institution? Well, Doolittle, of course, is handled in a largish way at Air and Space, and the patent medicine firm appears in the 1876 exhibit at Arts and Industries and also in the Museum of History and Technology. These two vignettes are part of a concept that executive producer Nazaret Cherkezian and director Karen Loveland have called, for convenience, "Foxy Grandpa" (although it is properly entitled *Reunions: Memories of an American Experience*).

The idea is that somewhere behind many of our displays is a person, a clever progenitor or disgraceful relative, who has used the displayed items, done the displayed jobs, acted out, in real life, the moments of history depicted in the museum. So these Smithsonian television and movie experts try to film "Foxys" for television time slots yet to be determined.

"Chick" Cherkezian says the subjects will always be paired, therefore cuttable in half. He'd like to make four films a year, eight "Foxys," that is, and use them however the demand indicates—maybe for schools, maybe for special programs.

The examples were fast and fine and funny. Watch for old Foxy.

Elsewhere in this magazine is a yarn about kinetic sculptures that race in California (where else?). I got intrigued with the concept and wandered over to the Hirshhorn one noon to see what kinetic sculptures we had—not competitive racers, but at least slightly movable.

The most fragile and restless looking of all those structures out on the terrace is the needle tower *Lorraine* by Kenneth Snelson, which in reality is as firm as Gibraltar, locked down by cables and iron clamps. But Calder's *Mobile-Stabile* (the orange and blue thing) moves easily, as does *Three Red Lines* by George Rickey, and many others.

I was shoving at *Spatiodynamique 17* by Nicolas Schöffer when a guard called out, "Sir, Sir!" in that way they have, so I walked briskly on.

—Edwards Park

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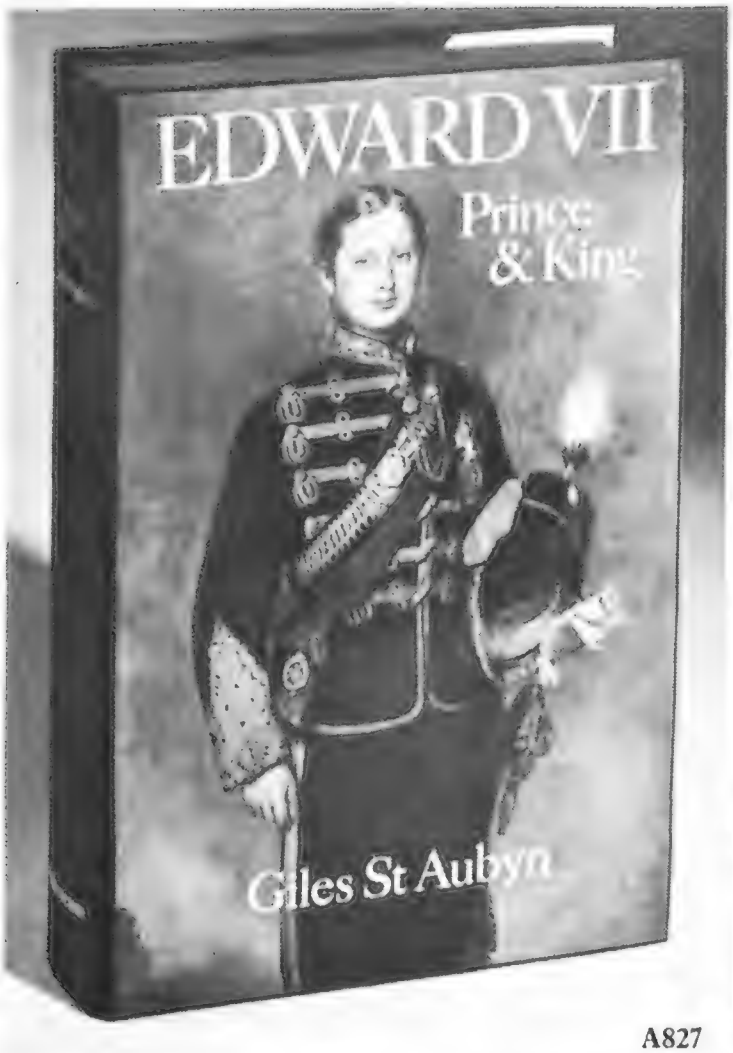


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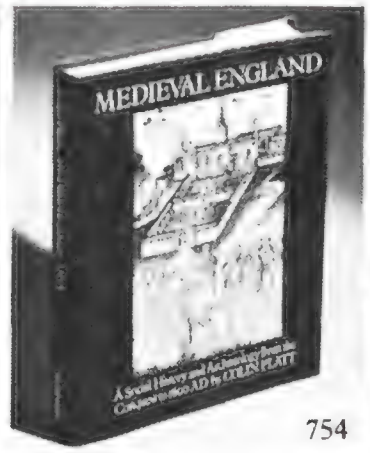


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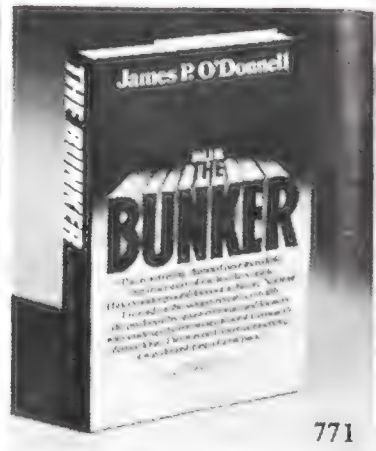


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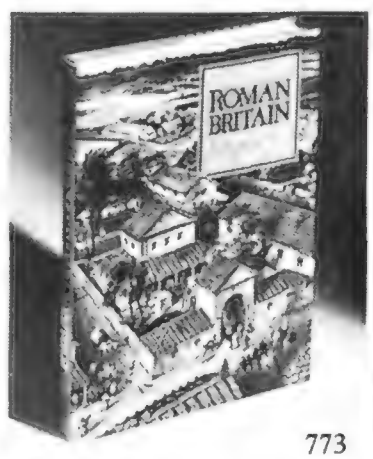


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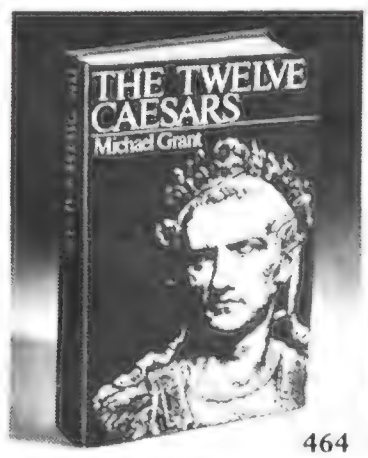


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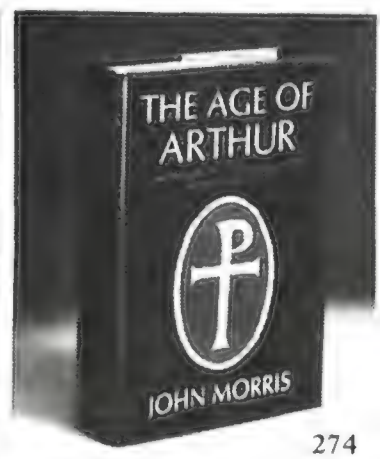


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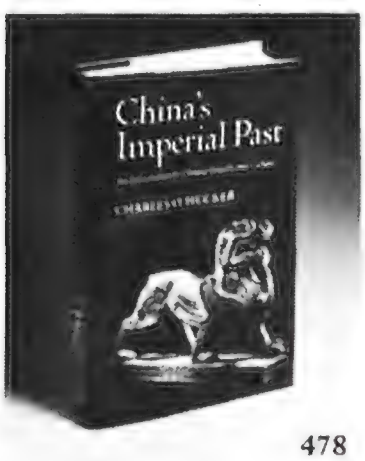


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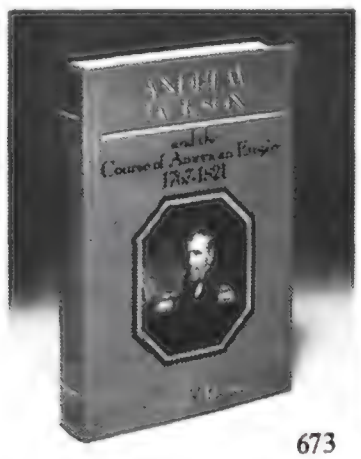


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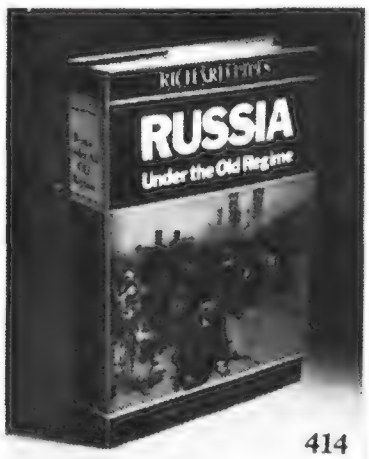


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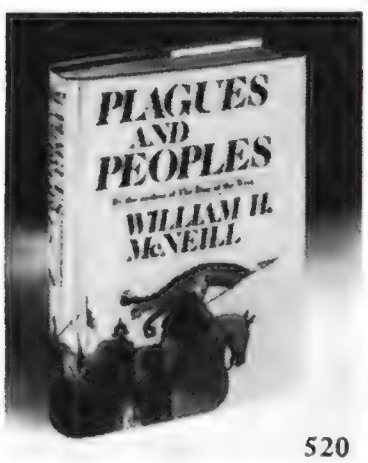


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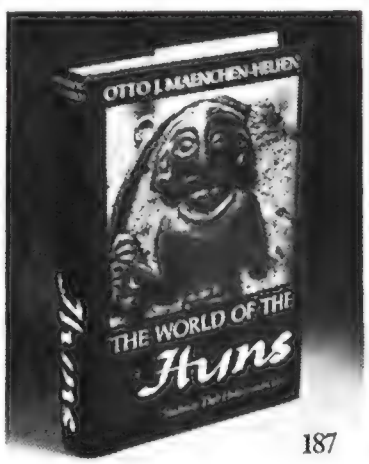


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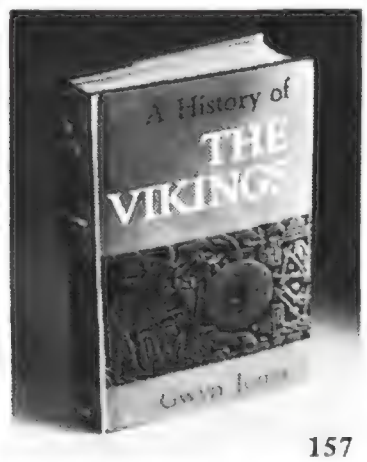


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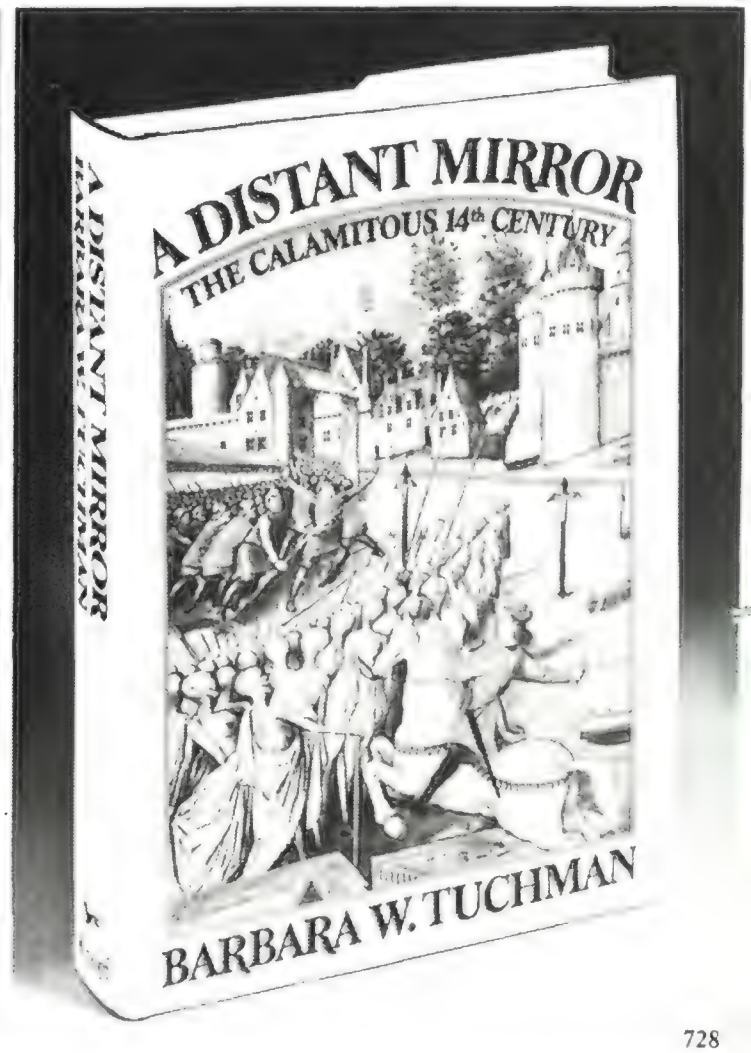


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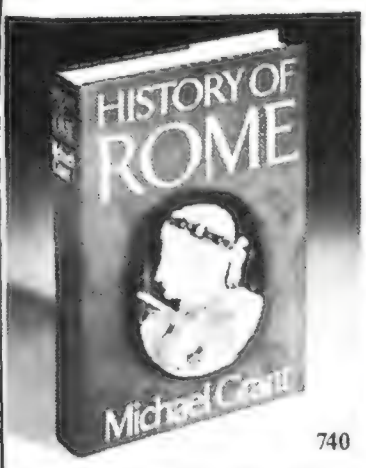


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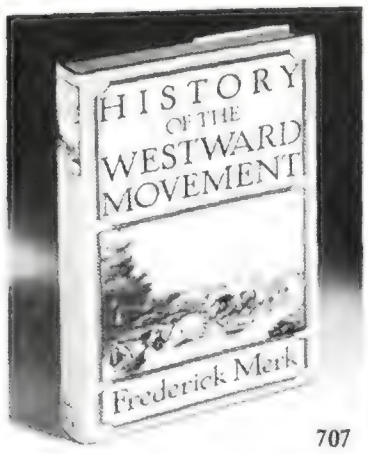


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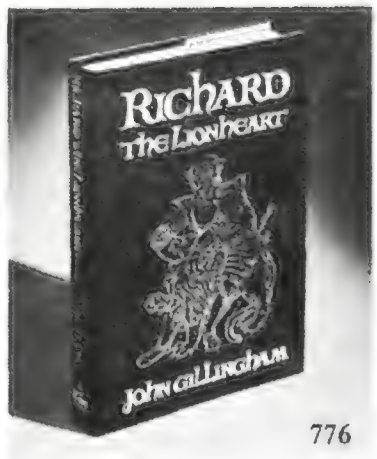


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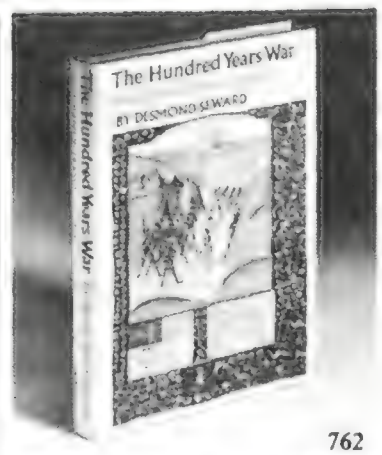


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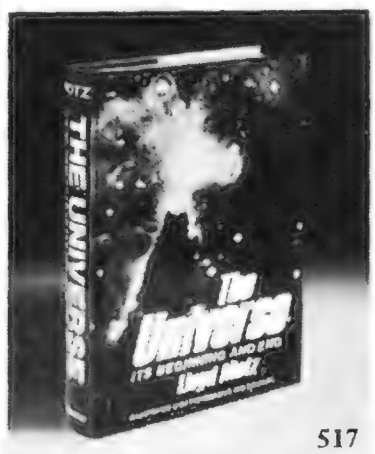


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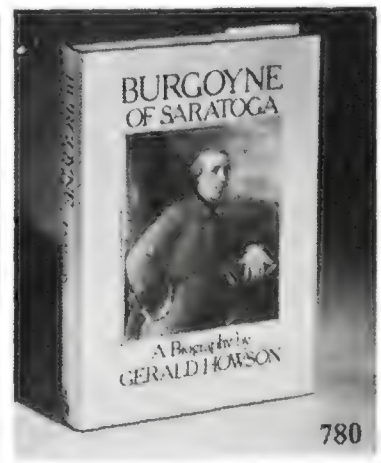


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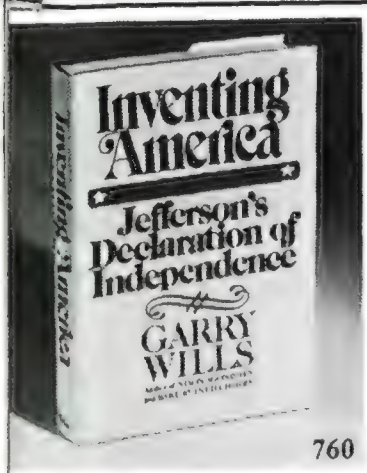


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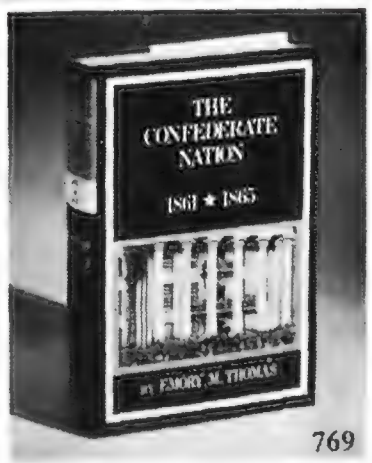


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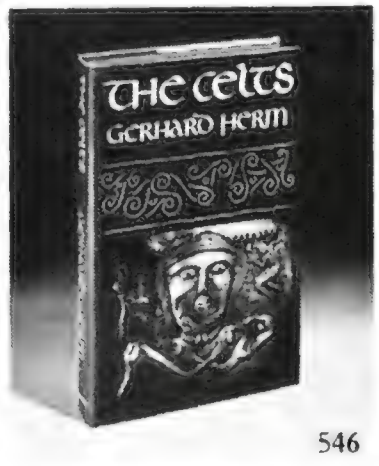


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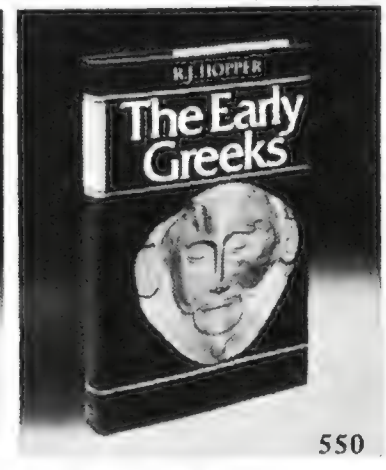


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*By Jess Cook*

# Los Angeles lands a huge new park—if it can land the land required

*Neither quake nor fire nor slide can stop the Santa Monica Mountains recreation area, but some real-estate developers just might*

Throughout proposed recreation area, real-estate signs advertise land tracts that are still for sale.

For all its notorious susceptibility to shuddery earthquakes, abrupt landslides and roaring fires, the Santa Monica Mountains area is one of the loveliest, most desirable (and thus highest-priced) pieces of real estate on Earth. That is why Bob Hope, Ronald Reagan, Leo Carillo, Huntington Hartford and other well-heeled celebrities staked out big spreads there, some later given to California or Los Angeles County for parks. And that—given the paucity of public parkland in a metropolitan area where ten million people live—is why the federal government is trying to assemble bits and pieces of the region, in a race against developers, into the patchwork, 100,000-acre, semiurban Santa Monica Mountains National Recreation Area—the largest such park in the United States.

Not easy. The last Congress authorized $155 million for the land acquisition, but only about $13 million of that can be spent by the National Park Service this fall—a drop in the bucket when you consider that many palatial beach-front and hillside homes in and near the range are price-tagged at a million dollars or more apiece. Even at such astronomical values the owners are not eager to sell, despite recurring landslides that block the ocean-front four-lane highway (p. 30) leading to Los Angeles on the east.

Jokingly, some blame the slides on "the ghost of the Duchess of Malibu," meaning the late Mrs. Frederick Hastings Rindge, the gate to whose ranch is only 100 yards from a recent disastrous slide. She always warned that these lofty hillsides would fall unless graded less steeply and, sure enough, they have. At night many commuters must park their Porsches and Mercedes-Benzes and walk around slides to get to their homes.

One recent, magnificent, smog-free afternoon I hiked to a vantage point atop Saddle Peak, midway along the 50-mile chain stretching from downtown Los Angeles west to Point Mugu and beyond to the Channel Islands. With me was Bob Chandler, first superintendent of the Recreation Area. I thought back: in

Rugged foothills run right into Santa Monica at edge of the Pacific; beyond lies Greater Los Angeles.

*Photographs by Paul Chesley*

*Nation's biggest 'urban' recreation area*

Hidden Valley, in Ventura County part of park, has acres of lushly carpeted pastureland.

Surfers disport themselves at sunset on a Santa Monica beach, where mountains meet the ocean.

Carefully landscaped Sugarman Ranch is one of many horse-breeding farms in Hidden Valley.

1542 when Juan Rodríguez de Cabrillo, seeking a Northwest Passage, dropped anchor offshore, what struck him was the density of the Chumash Indian population ashore and afloat in their plank canoes. No plank canoes now, but plenty of density. Sunlight glinted from the multitudinous rooftops of the Los Angeles basin (p. 26). The San Fernando Valley looked equally jammed. Only the crestline and the chaparral-covered slopes separating the two flat plains appeared somewhat as Cabrillo might have seen them.

"I'm always intrigued to come up here because you not only see that the Santa Monicas are right in the heart of the city but also what the alternatives are for their future," said Chandler. "There is a great deal of beautiful, untouched land. But look at those leveled ridges—and those homes on slopes that wouldn't have been thought buildable a couple of years ago."

Despite the surrounding urbanism, the resources to be found there are delightfully varied. Making a loop from Malibu up to Saddle Peak and back, Bob and I passed through or near seven different plant communities, from coastal sage scrub to coast live oak-dotted grassland. From the peak, Bob pointed to where he had seen bobcats, coyotes and golden eagles during early outings into his new domain. Diverse mountain and ocean views appeared with each turn of the track. The air was redolent with the fresh-sweet smell of the ceanothus, or California lilac. All this and beaches too. Although there is unlimited access only to the third of the Area that is already public property, its authorized boundaries include 37.5 miles of shoreline.

The challenge facing Chandler in actually assembling and managing the Area is awesome. Park Service veterans were describing it as the proverbial can of worms, probably the most complex such undertaking in Service history, even before the President's anti-inflation budget reduced initial funding for land acquisition from $75 million for 1979 and 1980 to $13 million. Now, without dollars to fend off intense development pressures, the task is more like taming a nest of local rattlesnakes.

Unlike other metropolitan recreation areas created of late, such as the gateway parks in and around New York and San Francisco, there is no surplus federal land available here for easy transfer. Within the boundaries are state, county and city parks and beaches totaling almost 40,000 acres. A key aim is to expand and link them, in the process securing a range-long backbone hiking trail and a scenic corridor around picturesque Mulholland Parkway. But the rest of the land is a privately owned puzzle of more than 17,000

*The author, a former Los Angeles bureau chief for* Time *magazine, now free-lances for a number of publications, and is at work on a screenplay.*

undeveloped parcels on the one hand and countless homes, ranches, subdivisions and commercial structures on the other.

With land values stratospheric and still soaring, all the faster in some choice locations because of the Area's coming presence, it is already evident that Congress' five-year authorization will buy far fewer acres than the number originally projected. Bob Chandler has recently set his goal at 70,000 acres in federal ownership, in addition to local government parcels. Many landholders prefer to develop rather than sell, in any case, and are proceeding accordingly. In effect, the Park Service is in the position of a late arrival at a cutthroat game of mountain monopoly. It desperately needs to assemble contiguous properties but has none to start with and so little spendable cash in its pockets that many turns at the dice must be sacrificed.

Movie crew works on location in Malibu Creek State Park, one of several the area will link.

At Pacific Palisades, erosion is undermining cliff-top houses that overlook the Coast Highway.

Of course, some land is always lost in the squeeze when urban parks are established. But as senior Park Service planner Gary Barbano observes: "Without at least half a dozen key parcels, it is questionable whether we will end up with a viable recreation area in the Santa Monicas at all. In that sense we are in a race against time. The outcome is hard to predict and we can't do the job ourselves. There has to be a like commitment by local government."

The mountain region is politically as well as geologically seismic, moreover, laced with almost as many overlapping fiefs as there are fault lines. Chandler and his staff must juggle the often conflicting interests and practices of the state, the two counties—Los Angeles and Ventura—and several smaller cities besides Los Angeles, each of them with numerous legislative districts, departments and specialized commissions that claim a slice of the Santa Monica Mountains' pie.

Little wonder that Bob Chandler, fresh from a comparatively serene post at the Jefferson National Expansion Memorial in St. Louis—which commemorates

Sweeping down a canyon, fire destroyed homes and cars on ocean front Broad Beach Road.

19th-century settlers of the West—acknowledges that "the job is really overwhelming right now."

The physical landscape he surveys is complex and dynamic enough. Earth tremors and slippage are common. Frequent fires are a natural element in the ecology. Most of the Recreation Area has been burned over at one time or another during the last 50 years, including more than 15,000 acres in late 1978. Unlike earlier conflagrations, one of which consumed almost 500 homes in Crestwood Hills and Bel Air, last season's fire (above) damaged fewer structures. But some residents are still cleaning up from rainy-season mudslides down the denuded slopes. Five months after a fire was halted only 100 feet from her property, Mrs. Sherry Banks returned to her Mandeville Canyon home one afternoon and found two feet of mud covering her floors. The fireman who arrived to inspect the scene offered little comfort: "We told them 30 years ago that no one should build in these mountains."

For most of the year, westerly ocean breezes waft over the peaks and through the canyons on their way to the smoggy basin and valley, and the mountains play an important, health-enhancing role in the regional "airshed." But the driest months of late summer and early fall coincide with hot Santa Ana winds from the northeast that whip any sparks in their path into ridge-leaping infernos.

Fire is actually beneficial to the chaparral, which recovers in five to seven years. Many plants, such as the fire poppy, bloom only when their seeds have been seared. Native trees are also well adapted. New growth sprouts rapidly from the charred limbs and branches of the coast live oak in an ever-impressive symbol of rebirth. Fire fighting not only defaces the mountains with fire roads (p. 32) and bulldozed breaks, but makes for less frequent, more intense outbreaks.

*Mountains not so high, but very steep*

The Santa Monicas are a young, transverse (east-to-west) range (most others in California run north-south) that emerged from the sea some 15 million years ago as a result of volcanic action. Some geologists think they have drifted northward from an original location as far south as Baja California. West from Point Mugu they continue for another 75 miles underwater, poking above the surface as the Santa Barbara Channel Islands.

But the drama of the Santa Monicas has less to do with their height—Sandstone Peak, the tallest, is only 3,111 feet—than with the steepness of the stream-cut canyons, the contrasts with hanging meadows and long valleys, and with marine bluffs, beaches and ocean.

Swiftly succeeding topographical and ecological conditions ensure a great variety of vegetation. Seen from the highways that provide most Angelenos with their only intimate mountain experiences, the chaparral appears a monotonous gray-green against the seasonal browns and bright greens of the grasses. Closely approached, it becomes richly and colorfully diversified. California buckwheat, sagebrush, prickly pear cactus and black, white and purple sage dominate the coastal sage community. Overlapping it are the denser, often impenetrable chaparral groups of chamiso, clumpish laurel sumac, toyon, scrub oak, ceanothus and a brace of berry-bearing shrubs including manzanita, gooseberry, currant and wild cherry. Sycamore, alder, bay laurel, willow, black cottonwood and black walnut share the canyon bottoms and north-facing foothills with the coast live oak. This is also the southern terminus for the valley oak, largest California oak.

With such a habitat, the wildlife population is predictably remarkable for the heart of a major metropolitan area. Casual walkers encounter ground squirrels, rabbits and mule deer. Coyotes are common and aggressive enough to be found loping through the

suburbs in hopes of dining on unwary family pets or homegrown fruit. Raccoons, opossums, skunks and foxes leave tracks on and near the trails. And while the pronghorn antelope and grizzly bear once here have long since retreated, mountain lions and bobcats roam not many miles from shopping plazas.

As for bird watchers, naturalists claim that they can spot both the tiny calliope hummingbird and the giant California condor from stations within the range.

The original Indian inhabitants are variously dated to as far back as 5000 B.C. and before. Little work has been done at more than 100 archaeological sites within the Recreation Area. What is known, however, is that the combination of Spanish settlement, diseases and labor impressment of the late 18th and early 19th centuries decimated the native communities. There have been sporadic efforts to erect an Indian historical center within the mountains. Alas and ironically, the most promising site, 40 acres of potentially prime parkland donated to the Survival of American Indians Association by Marlon Brando, has been optioned to a developer by that very group.

During the Spanish period, the Santa Monicas were sectioned into vast ranches. One of them, 17,000-acre Rancho Malibu (from Maliwu, a Chumash village), survived intact into the 1920s. Then the state forced condemnation of a strip for what is now the Ventura Freeway, and Mrs. Rindge, who owned this potential Riviera, began grudgingly to lease waterfront lots for what became the Malibu Colony, a gated enclave of show-business elite.

Cheek-by-jowl luxury homes at Las Flores Point are in tract to be encompassed by Recreation Area.

Ranching is a dwindling activity now but another economic pursuit with a venerable history is going strong. Hollywood has used the Santa Monicas as a location (p. 30) since the earliest days of the screen. The Malibu Creek territory in the center of the range, with its majestic rock faces, sandstone pinnacles and well-watered woodlands, was a particularly popular site. In 1946, after shooting *How Green Was My Valley* on the property, 20th Century-Fox purchased a 2,400-acre country club. The creek had been dammed around 1900 to create Century Lake. Paramount also bought a chunk of land. The Century Ranch is now the core of Malibu Creek State Park—but the Paramount spread, taking the more typical and depressing course, is on the verge of conversion for luxury homes.

Actors who became familiar with this lovely terrain often bought in for themselves. Ronald Reagan made *Prisoner of War* for MGM on a hillside, made appropriately stark by a fire, overlooking 400 acres of lovely meadow and woodland he later acquired. Along with a 1,000-acre tract nearby once owned by Bob Hope, it is now a part of the Malibu Creek State Park.

"I'm delighted by that," Reagan says. "I rode over that land for the better part of 15 years and enjoyed every second of it." When he sold the ranch upon becoming Governor in 1968, he didn't leave the Santa Monicas; his permanent home, with a sweeping ocean view, is in Pacific Palisades, across the mountains.

A fire and service road snakes through Latigo Canyon, partly burned in a 1978 brush fire.

Countless condominiums (this one is Palisades Highland Village) climb hillsides into park.

As of the early 1960s, the unrestrained pace of development made it seem as though pristine scenes in the Santa Monicas would be preserved almost exclusively on film. But real-estate brokers realized they were riding a tiger in selling their mountain and coastal listings. As Frank Roop, a broker and president of a landholders' association which opposes the Recreation Area, notes with distaste: "The guy who moves into the mountains and builds his home immediately becomes a preservationist. He wants to look at the hills and see them unimproved." Homeowner organizations sprang up in scores of canyons. Before long, members were banding together to oppose city and county master development plans, scuttle road and utility projects and spearhead campaigns to create mountain parks. "Twenty years ago, we could have acquired all the land in the Santa Monicas for $20 million," sighs Marvin Braude, a Kenter Canyon resident whose early activism boosted him onto the Los Angeles City Council.

In 1963 one of Braude's neighbors, civil engineer Ralph Stone, helped bring many of the homeowner groups under an umbrella organization, Friends of the Santa Monica Mountains. There followed victorious fights against numerous freeway and sewer projects that would have peeled open unspoiled sections of the mountains and shore. Finally, in 1978, over the protests of developers, Congress passed and President Carter signed the law creating the Recreation Area.

Congress simultaneously created a pioneering $30-million program (part of the acquisition funds) which puts the Park Service in the grants business for the first time. The grants will enable local governments to buy land as quickly as possible for parks or simply for open space around the Recreation Area—but there is a catch: money will not be forthcoming until the state, counties and cities adopt plans and ordinances to protect the mountain region.

No other park in the nation is in such desperate need of a quick infusion of land-buying dollars. Chandler was heckled recently when he addressed a property rights group, and taunted by Frank Roop. "Have a lot of fun, fella," the portly broker remonstrated. "One hundred million dollars isn't even going to cover the costs of condemnation lawsuits."

The weakest local governmental link is the Los Angeles County Board of Supervisors, the most powerful and strategically placed body in the region and one which has always been dominated by the boom-growth ethos. When I asked the county's chief planner how many development projects have been turned down in recent years, the answer was a prolonged silence.

I joined a recent, motley demonstration against one projected subdivision. Sue Nelson, the outspoken, determined current president of the Friends, came by

Northwest of Beverly Hills a mountain is leveled for homes. Central city is on horizon.

and remarked pessimistically: "The park legislation is a Band-Aid on the underlying speculation going on," she objected. "I don't see that the threat has diminished in the least."

A soapbox was produced, the crowd gathered around and Sue reiterated her position. "All of you have to stay involved for at least the next eight to nine years," she warned. Dogs barked, horses whinnied, television cameras ground out an evening news spot and more speakers paraded to the stand as the peaks surrounding the summit-to-summit trail shimmered in the sunlight. "Obviously, we're going to have to fight ridge by ridge," said Sierra Club leader Margot Feuer, gesturing toward the hills. "But if that's what it takes to deal with the board of supervisors, then that's what we'll do."

The fight might be waged to greater effect if the true constituency—the public at large—were less passive. There is little doubt that Angelenos favor keeping the beauty and potential of the mountains and coast intact. But most are surprisingly unfamiliar with the Santa Monicas. They flock to the public beaches and only in recent years have begun to discover the beauty of the mountain areas.

There is latent conflict here between the aim of the devoted groups that initiated the Recreation Area—to leave the mountains just as they are—and the need to mobilize heavy public backing for implementation. This will almost certainly require more intensive recreational usage than the stalwarts, most of them mountain dwellers themselves, care to contemplate. Aware of this problem, Bob Chandler is already plotting promotional activities. Park ranger outreach programs will augment the ongoing activities of schools and community organizations.

Southern California building fever waits for no planner. And it sometimes takes exotic turns. Not long ago I hiked the Westridge fire road with my 13-year-old son Seth through intermittent showers. Heavy mist shrouded the Santa Monicas as we arrived at an abandoned Nike site on the valley side of the range. To complete the paintinglike scene, a troop of robed Japanese Buddhist priests emerged from the gloom, preceded by the clang of their prayer cymbals. They bowed. We bowed, too, and slipped away to allow them their mountaintop prayers in privacy.

Bob Chandler wasn't at all astonished when I mentioned the incident. "They want to build a peace temple on one of the ridges," he said. "There are just so many requests."

East (central Los Angeles) is at top of the park map spread out by Sue Nelson, local conservationist.

Burned last year, hillside of wild flowers, topped by charred oak, shows rapid regrowth of mountain flora.

Central court of laboratory wing of Salk Institute for Biological Studies (1959-65) at La Jolla, California, Kahn's first full realization of a new architecture. Left and right are laboratory loggias.

*By John Lobell*

# A lucid mystic helped transform our architecture

*Classical principles, the spirit of materials, and a visionary's pure ideals informed the high art of Louis Kahn, master builder*

Louis Kahn was an anomaly among modern architects: a mystic in an age of the rational, a form giver in an age of methodologists. But by the end of his life, Kahn had done a great deal to transform modern architecture. He brought to it a new awareness of history and a concern for structure as a giver of order.

The modern architecture that Kahn worked to transform was defined by the rationalist world view which had emerged during the Renaissance. There were reactions against rationalism during the course of its 500-year development, but on the whole its progress was steady. In the 17th century, Newton's successful use of mathematics to describe both Earthly and celestial mechanics lent rationalism great support, and the 18th-century Enlightenment saw it extended from the natural sciences to human affairs. By the 19th century the Industrial Revolution had seemingly confirmed the powers of rationalism not only to understand nature, but also to conquer nature; then, with Marx and Freud, rationalism was extended to history and consciousness.

There was originally a spiritual impulse behind the rationalism of modern architecture and its symbol, the glass skyscraper, and there was promise of a utopian existence in a crystal city. Today, however, that glass skyscraper merely serves to spread alienation and sterility to cities throughout the world. The problem is not merely the "style" of modern architecture, but its basic philosophical assumptions.

From the Renaissance through the mid-19th cen-

*Color photographs by John Nicolais*

Robert C. Lautman

Kahn, several years ago, listening to students singing at Settlement Music School in Philadelphia.

tury, the fine, clear vision of the rationalists was appropriate. But in the late 19th century, just as absolute rigor in all of the sciences seemed obtainable, the underlying foundations of the rationalist view of the world began to crumble. Experiments to determine the Earth's motion through static space revealed disquieting results. Eventually Einstein's Special and General Theories of Relativity transformed Man's understanding of gravity, space and time (SMITHSONIAN, February 1979). Later, quantum mechanics undermined causality, and in 1931 the American mathematician Kurt Gödel affirmed arguments showing the incompatibility of mathematics and nature.

Kahn realized, as had numerous poets before him, that reason is the discipline for understanding things which *are*. But if we attempt to see a larger world, one which includes *that which is not yet* along with *that which is,* as the creative scientist, artist and architect must, then a more powerful discipline is needed, one used by the poets, which Kahn called "Order."

Louis Isidore Kahn was born on February 20, 1901, on the Baltic Island of Saaremaa, Estonia (then part of Russia). There, as a young boy, his face was burned by fire while he was carrying hot coals. He emigrated with his parents to Philadelphia in 1905, where they lived in poverty. He was brought up in a traditional Jewish —but not strictly Orthodox—way. His later pursuit of knowledge always had a Talmudic, questioning quality to it. As a high school student, Kahn's talents as a painter and musician enabled him to win citywide art prizes and help support his family by playing the piano in silent movie theaters. He had won a scholarship to study art, but in his last year of high school he took a course in architectural history and resolved to become an architect. From 1920 to 1924 he studied at the University of Pennsylvania. Penn at that time was a Beaux-Arts school, modeled on the French Ecole des Beaux-Arts (SMITHSONIAN, November 1975) which had been founded in the early 19th century and had its roots in earlier academies.

During the 1930s, Kahn became familiar with the works of the modern European architects, particularly those of Le Corbusier. Kahn was excited by the possibilities modern architecture offered for the use of lightweight industrialized materials, abstract geometric forms, and for large-scale urban renewal. However, he was troubled by the absence in modern architecture of the more solid classical principles he had learned in his Beaux-Arts education. He set for himself the complex task of using the industrialized materials and methods of construction of modern architecture to express the inner orders which had been present in the Beaux-Arts.

Kahn was a small man with a shock of thick white hair and thick-lensed glasses (above). The lower part of his face was scarred from the childhood accident. He was ugly with an intense beauty. Architectural historian Vincent Scully jr. said of him, "Nobody gave off so much light. It was a physical light that came from the activity of his imagination and the aliveness of his intellect through all his pores." Kahn's voice was soft and hoarse. When he spoke, others quieted and strained to listen. His speech was often in poetry and was always a questioning, a pressing deeper into architecture. His words, therefore, were difficult for many

*John Lobell's book,* Between Silence and Light: Spirit in the Architecture of Louis I. Kahn, *is published this month by Shambhala Publications.*

At the University of Pennsylvania, Kahn's Alfred Newton Richards Medical Research Building (1957-61).

to comprehend. And they were also difficult for Kahn himself in terms of conveying his thoughts.

Reaching artistic maturity late in life, it was not until Kahn was in his 50s that he began to resolve the hierarchical order of the Beaux-Arts with the democratic lightweight materials and free-column grids of modern architecture. As this resolution became apparent, there was an excitement among the architects who were around Kahn, and who began to see in his work a major achievement. Referring to a presentation Kahn made of one of his buildings in the mid-1950s, Robert Geddes (now dean of the School of Architecture at Princeton and then a fellow faculty member with Kahn at Penn) said: "There was a feeling of being at the absolute frontier of architecture."

Kahn's resolution was first fully expressed in the Alfred Newton Richards Medical Research Building at the University of Pennsylvania (above), which he started in 1957, and which was quickly recognized as a significant challenge to the previous course of modern architecture. For the first time in more than 20 years, red brick appeared in an important building. In the "Medical Towers," Kahn started with the rational assumptions of modern architecture: a clear response to the functional program and an honest, geometric expression of materials. But he found these assumptions alone inadequate, and he went beyond them. He distinguished between what he called "served" and "servant" spaces: the served spaces being for people and the servant spaces for pipes, ducts, stairs, toilets, and so on. He also used a bold precast-concrete system, which allowed the structure to give order to the spaces as well as support the building. This concern for hierarchy and structure was symbolic of Kahn's larger search for a meaningful order in his buildings, a search which paralleled a poetic exploration that led him to what he eventually called "Order."

Rationality had set consciousness and nature apart, with mathematics as their link. Order set them together, dependent on each other. Kahn did not say what Order is, speaking of it only in metaphor, but we might say that Order is the principle underlying all things, a quality things have in their beginnings outside of time. We might also say that Order is an active creativity: it is the way things come into being.

Kahn spoke of this coming into being using a complex metaphor involving Silence and Light. He said: "Silence—the unmeasurable, desire to be, desire to express, the source of new need—meets Light—the measurable, giver of all presence, the measure of things already made—at a threshold which is inspiration, the sanctuary of art, the Treasury of Shadow. I said that all

An oak-sheathed, light-filled inner court at the Yale Center for British Art (1969-74).

material in nature—the mountains and the streams and the air and we—are made of light which has been spent, and this crumpled mass called material casts a shadow, and the shadow belongs to Light."

Kahn distinguished between Form and Design. In searching for the nature—the Form—of a building, Kahn would always start with the question: "What does this building want to be?" In the case of a chapel, for example, Kahn described the Form by saying: "First you have a sanctuary, and the sanctuary is for those who want to kneel. Around the sanctuary is an ambulatory, and the ambulatory is for those who are not sure, but who want to be near. Outside is a court for those who want to feel the presence of the chapel. And the court has a wall. Those who pass the wall can just wink at it."

Once he sensed the Form, Kahn could begin the Design. Design gives Form specific shape and materials. Kahn said: "A great building, in my opinion, must begin with the unmeasurable, must go through measurable means when it is being designed, and in the end must be unmeasurable. The only way you can build, the only way you can get the building into being, is through the measurable. You must follow the laws of nature and use quantities of brick, methods of construction, and engineering. But in the end, when the building becomes part of living, it evokes unmeasurable qualities, and the spirit of its existence takes over."

During the 1960s our institutions came under attack. Many architects were disillusioned enough either to drop out or to join in radical political action for reform. Both reactions stemmed from a feeling that meaningful architecture, per se, was no longer possible. Kahn was sensitive to these views but shared neither of them. He was too optimistic to drop out and too realistic to believe that radical politics would

The Kimbell Art Museum (1966-72), Fort Worth. Walls are of travertine, roof capped with lead,

bring about a utopia in which architecture would again be meaningful. Rather, he practiced his art on a level that transcended his troubled times and continually tried to go back to beginnings—to find out, for example, what the original essence of education was before designing a school.

He said: "In consultation with nature you will discover the order of water, the order of wind, the order of light, the order of certain materials. If you think of brick and you're consulting the orders, you consider the nature of brick, you say to brick: 'What do you want, brick?' Brick says to you: 'I like an arch.' If you say to brick: 'Arches are expensive, and I can use a concrete lintel over an opening, what do you think of that, brick?' Brick says: 'I like an arch.' "

After Kahn designed the Richards Medical Towers in Philadelphia, Dr. Jonas Salk asked him to build a laboratory in La Jolla, California. "When Salk came to my office," Kahn once recalled, "he said, 'There is one thing which I would like to be able to accomplish.

reflecting a dull sheen of light in the blazing Southwestern sun. Skeletal structure is of concrete.

Detail of vault springing. Natural light flows in through long skylights. Filters protect the art.

I would like to invite Picasso to the laboratory.' " The Salk Institute for Biological Studies (1959-65) is in some ways a repetition of the basic organization (the Form) of the Richards building. However, the Salk Institute introduces new elements into Kahn's work. The building not only responds to the stated requirements of the program, but also seeks to respond to the whole human being. Working from the outside in like a mandala—a mystic symbol of the universe—the building represents body, mind, society and spirit. The stair and toilet towers, on the outside, serve the body. The laboratory spaces, where work is done, serve the mind. The walkways and stairs providing entrance to the laboratories are places for people to meet and serve society. The tower studies, which allow the research fellows to contemplate their work or the ocean in solitude, and the court, between the two halves of the building, serve the spirit. The court (pp. 36-37) is a "sanctuary," a place for quiet, a place without any purpose but to put one in touch with Being.

Kahn's Kimbell Art Museum (1966-72) in Fort Worth, Texas, is dedicated to bringing the viewer and the paintings together in natural light. Most museums use artificial light because the ultraviolet in sunlight can damage paintings. However, Kahn preferred natural light because it is alive and ever changing. To deal with its damaging qualities, he brought the light in through long skylights in the vaulted ceiling, and then used a screen inside to filter the light and reflect it off the concrete ceiling. The exposed concrete of the ceiling, usually a dull material, here has a warm glow.

The building is simple and austere and at the same time is rich and noble (left and above). Its richness comes not from decoration applied as an afterthought, but rather from the reverence with which Kahn treats each of the materials. The structure is concrete, alive in the light; the walls are travertine, a form of limestone, here used as a nonstructural surface material; the floors are oak, warm underfoot; the roof is lead, an ancient and impervious material that easily bends to fit the roof's curves and reflects a dull sheen in the Southwestern sun.

One of Kahn's last buildings, the Yale Center for British Art in New Haven, Connecticut (1969-74), was built across the street from one of his first, the Yale University Art Gallery (1951-53). The Center is urban in character, with shops along the street on the ground floor, and is clad in a pewter-colored stainless steel. Dark on the outside, the building explodes with light inside. A system of skylights (p. 39) brings ultraviolet-free light into the galleries of the top floor and, through two interior courts, brings this light down

into the building. The courts are paneled in a luminous light oak and have balconies looking into them from the other floors of the building. One court is at the entrance. The other is near the center of the building and is Kahn's last offering to Silence, a space without a function, a place for that which is not yet.

Kahn's career was one of constant struggle, both for creative growth and for survival. His circumstances were at times miserable. His method of working, which was frequently slow, excluded commissions from clients who were motivated by speed or profit. Business inefficiencies in his offices, and projects in India and Pakistan which sometimes required great expenditures only to fall through, burdened Kahn with crushing debts. It is remarkable that he was able to practice architecture as the highest of arts—totally uncompromised by expediency—and not only survive, but also complete so many exceptional buildings.

Through his 60s and into his 70s, Kahn designed buildings and projects in the United States as well as in Italy, India, Bangladesh (below and right), Israel, Iran and Nepal for the major human institutions: residence, religion, art, government, science and medicine, industry, theater and education. His buildings were contributions to architecture and to human culture, and several in this country are ranked among our finest. He gained recognition as one of the leading modern architects and was awarded gold medals and honorary degrees, among these the Gold Medal of the American Institute of Architects and the Royal Gold Medal for Architecture from the Royal Institute of British Architects. He was elected to—and honored by—the American Academy and Institute of Arts and Letters.

Louis Kahn died of a heart attack on March 17, 1974, at the age of 73, while returning from India where he was working on several projects. He was at the height of his creative powers.

Above, front of Ayub National Hospital in Dacca, Bangladesh, begun in 1963 as part of a city master plan, uncompleted at time of Kahn's death; walkway, right.

*By Kenneth Brower*

# Two worlds of the harp seal: above and beneath the Arctic ice

*Photographs by Bill Curtsinger*

*Divers must penetrate the cold green canyons below the surface to study these creatures and their adaptations to a harsh environment*

*Few conservation issues have generated more intense emotions than the annual harvest of baby harp seals in the Gulf of St. Lawrence. Whenever photographs of the huge-eyed, pure white pups are published, they elicit demands that the practice be halted, but the Canadian government argues that the harvest is as legitimate as any fishery and represents a way of life for people who could not survive without it. In this issue* SMITHSONIAN *introduces the subject with the following article on the animals themselves in their world under the ice. It is an excerpt from* Wake of the Whale, *a profile of marine-mammal photographer Bill Curtsinger by Kenneth Brower. The book will be copublished August 1 by E.P. Dutton and Friends of the Earth. Elsewhere in this issue (p. 76) novelist Richard Adams expresses the outrage felt by many about the killing of the seals. In a future issue* SMITHSONIAN *will report on what really happens during the harvest and what it is like to be there.*

The helicopter flew low over the March ice in the Gulf of St. Lawrence, near the Magdalen Islands, looking for a place to land in the middle of the huge colony of harp seals. The two divers could hardly move in their air-insulated, inflatable diving suits, weighed down with 80-pound belts necessary to balance the buoyancy of their suits. With the pilot they looked for a promising concentration of breathing holes where they could land without disrupting the seals.

They saw the dark, pointed sacks of adult harp seals hauled out beside the leads; the white, hard-to-see

Divers Bora Merdsoy, left, and Bill Curtsinger check their equipment while sitting at the edge of a lead.

A harp-seal pup waits patiently by a breathing hole on the frozen Gulf of St. Lawrence. The adult seen rising to the surface may not be its parent; the adult will sniff the pup to check on its identity.

*Ocean ice is home to the harp seal*

pups beside their mothers; the breathing holes, asterisked by tracks the seals had made while crawling in and out; the spattered orange trails of afterbirth. The pilot found a place he liked, and dropped the helicopter down.

The divers were Bill Curtsinger, who has spent his professional life making underwater photographs of whales, dolphins and other sea mammals, and his assistant, Bora Merdsoy. Now they waddled like sumo wrestlers to the edge of the lead. The water in the lead was black, and slush ice floated there. The seals, when not using their breathing holes, rise for air at the leads, and the males tend to congregate there. Pausing at the edge, Bill or Bora screwed a regulator onto an extra air tank, attached the tank to a downline, and lowered it through the slush ice. The spare tank would hang at 50 or 60 feet, in case of emergency. Then the men followed, entering the water with Unisuits slightly overinflated. Bobbing on the surface, each rolled so that his purge button was up, pressed it, and sank. Underwater, each man could feel and hear the stream of bubbles escaping from the circle of vents around the button. If he was sinking too fast, he would hit the other button to dump some air back in.

The first day, Bora wore a rope, though Bill told him it would not be necessary.

"I didn't know if there would be currents," Bora says, "or what the visibility would be. But Billy was right—there were no currents, and you could always see the hole you came through. My job was to keep the hole in sight. Usually that meant I was above him, but sometimes it meant I was deeper. I'd bang on my tank if he strayed too far away, or I'd wave him back. We hung that yellow tank under the hole, too, to make it more obvious."

When Bill first entered the water, his face felt cold for five or ten seconds, then he no longer noticed. His body was warm. His first Unisuit had leaked, but this one was fine. Diving this way was warmer than skiing.

He swam down into an inverted landscape. Upside-down hills of ice rolled away on all sides of him. The floes, crunched together by wind and tide, had "raftered," pushing up or down as pressure ridges above and below the surface. Above the surface, the buckled slabs were blocky and sometimes snow-covered. Below, the ocean had sculpted the ice into fluid curves. The submarine walls were very like those carved by Southwestern rivers in Navajo sandstone, except that the scale here was smaller and the warm colors of the desert were replaced by cold blue-greens. The harp-

A male harp seal that had been courting "yells" at the approaching divers, releasing a stream of bubbles.

seal canyons did not plummet sheerly down to a silty Colorado; they plummeted *up* to the lead, a bright river of sky and sunlight. Blocks of ice floated in the lead—the clouds in that sky—and seals were the birds. In places along the canyon walls were submarine taluses of ice slabs. Everywhere were caves and caverns. The harp seals went spelunking, entering and exiting the caves freely. They sat on the massive marble chairs and tables of sunken slabs, anchoring themselves with the claws on their flippers, watching the progress of the orange Unisuits.

*A sound like hordes of clowns*

The Unisuits swam down into an underworld of sound. The chatter of the colony buffeted them, a music anything but harplike. Harp seals are named for the dark, lyre-shaped markings on their backs, not for their voices. "The noise!" remembers Bill. "Geez, it was like a barnyard." The seals sounded like hybrid armies of pig-birds gathering at troughs, or like nursing puppies, or like hordes of clowns honking the bulbs on their noses.

The water was clear except for some ctenophores, or "comb jellies." Bill and Bora saw no fish, except for one ray, and that came up in the mouth of a seal. The year before, Bill had glimpsed a pebbly bottom, but this time they saw nothing but darkness. The seals, they suspected, could usually reach bottom, though the ice was forever drifting, and the depth continually changed. Sometimes the ice drifted close inshore of the Magdalen Islands, sometimes into deeper waters, so the bottom was always different underneath. The harp seals' floe, then, was like that flying island in *Gulliver's Travels*, except that the residents had no control. Falling asleep over one stretch of bottom, they would wake, shuffle to the lead, and dive to find themselves over a new stretch. If harp seals have a cosmology, the ice is the universal center and the sea floor orbits.

The harp seal, *Pagophilus groenlandicus*, "the ice-lover from Greenland," wanders in summer over much of the Arctic. It ranges north of Svalbard, Franz Josef Land and Novaya Zemlya to within 500 miles of the Pole. It hunts the waters around all of Greenland except the northern tip. It roams westward past Baffin Island and into Hudson Bay, eastward past Severnaya Zemlya to the Taymyr Peninsula in the Soviet Union. In October and November, when the northern seas begin to freeze, the seals turn south. The pack ice marches after them, and the seals retreat before it, hundreds of thousands of them. In February and March when the sea ice to the south is thickest—safest for rearing pups—the females haul out. They give birth on the frozen ocean off the Magdalen Islands in

A harp seal swims through the caverns formed when sea ice is piled up by currents into pressure ridges.

An exceptionally curious seal left its group, swam down to camera and mouthed it. View is straight up.

*Ocean ice is home to the harp seal*

the Gulf of St. Lawrence, off Labrador, off eastern Greenland and in the White Sea off the Soviet Union.

Few creatures see first light on a harsher landscape or draw first breath in more bitter air. The harp-seal pup must be, and is, a miracle of cold-weather design. Its pelt, at first glance pure white, has at second glance a fuzzy immateriality. The hairs are translucent. The sun shines through to warm the skin, and the pelt holds the heat close—a "greenhouse effect." The pup begins life at 15 pounds—not much bulk for a warm-blooded creature that will spend its life in cold seas—but the transfer of substance from the mother is so speedy and efficient that in three weeks the pup weighs 100 pounds. This neat trick is all the neater in that *P. groenlandicus* is not a large seal. Females weigh less than 400 pounds; in less than a month they give more than a quarter of themselves. The magic is in the milk, 45 percent fat, 10 percent protein.

The pup's eye is a high artifact of accommodation. It has a light-gathering lens nearly as round as the whale's, and its retina, like the whale's, is backed by a light-amplifying tapetum, for like the whale the pup will do most of its adult hunting in the dimness underwater. Yet unlike the whale's eye, the pup's first opens on a white, glassy, dazzling world. The seal eye sees well both in darkness and in light, in water and in air. In the glare on the ice, the pup's pupils narrow to vertical slits. Underwater, when the pup on its first clumsy swim looks down into the dark, strong dilator muscles open the pupils wide. A pronounced corneal astigmatism aids vision in the water. When the pup returns to the air, the pupil narrows again to a slit, which lies parallel to the astigmatic axis, thereby eliminating the astigmatism. The eyes of baby harp seals, huge, dark, lustrous, look out innocently from a thousand advertisements protesting their slaughter. They break hearts in warm, well-lighted living rooms all over the world. But those eyes are full of something better than appeal; they are full of function.

Canada permits its own sealing fleet, Norway's fleet and Canada's coastal inhabitants to take as many as 180,000 harp seals a year from Canadian whelping grounds. No one is sure what the harp seal population is in the Western Atlantic. The Canadian government estimates 1.4 million. The U.S. Marine Mammal Commission has made some working estimates, but also has contracted with a British university to make a definitive study. Most of the seals killed are pups. The white pelt so indispensable to *P. groenlandicus* in infancy has a fatal attraction for the fur trade. When, three weeks old, the pup ceases its heroic bouts of nursing and begins to shed its whiteness for a grayer color, it does so not a moment too soon.

March was mating time, and Bill and Bora swam into the middle of that ritual. They watched double-helical courtship dances, suitors spurned, happy endings. They became participants themselves. One day a young harp seal kissed Bill's mask.

"He has an attraction for animals, anyway," says Bora. "Dogs will bark at me, but they come right up to him. Billy's childlike, without being childish. That's one of his attractions to people, as well as animals."

*Picking up the cues*

For the kissing episode, Bill has an explanation. "Often immature or naive males will come around. I don't think they understand the mating game, you know? With a lot of animal species, juveniles will follow the breeding population, not knowing quite what to do. You see gangs of them going around. Adélie penguins are like that. Young harp seals are real curious. They almost always come up to you. If you were more like a seal, they'd hang around more. I stroked the underside of one seal who was hanging around, and it pushed its face into my mask.

"You pick up sexual innuendos. No scientist would buy that information, I guess, but if you're human, you sort of know all of them—all those cues. I don't have any desire to make love to a seal. It's just that . . . it's just that every once in a while you pick up one of these sexual cues, just like you would with your own kind.

"Underwater, most animals are really curious about your face mask and the camera dome. That's always what they seem to cue in on. They know where your eyes are in the mask, and I guess the glass dome looks like a big eye to them. When a whale looks at you, as he goes by, he's not looking at your toes. He's looking at your eyes or your camera dome. Sea lions, too. The harp seal that pushed its face against my mask was especially curious—more curious than the others."

A male, top, and female engage in courtship beneath a lead in which sea ice is forming. They will not form lasting bond. Mating occurs almost immediately after females give birth, but fertilization is delayed.

The Unisuit was not perfect protection against the chill. Whichever part of Bill's body was lowermost soon felt it. When his legs got cold, he turned upside down in the water and the air in the Unisuit rose to warm them. When his torso and arms got cold, he reverted. He could work equally well in either position. In the sea, up and down are directions important to mammals only when it's time to go up and breathe.

Bill had installed oversized control knobs on his *Oceaneye* camera housing, because in chilly waters his hands get too cold to turn normal-sized knobs. In the Gulf of St. Lawrence, his hands sometimes got too cold anyway, despite the big knobs and the Unisuit gloves. The gloves had three fingers. (Five-fingered gloves with sufficient insulation would be too thick to be work-

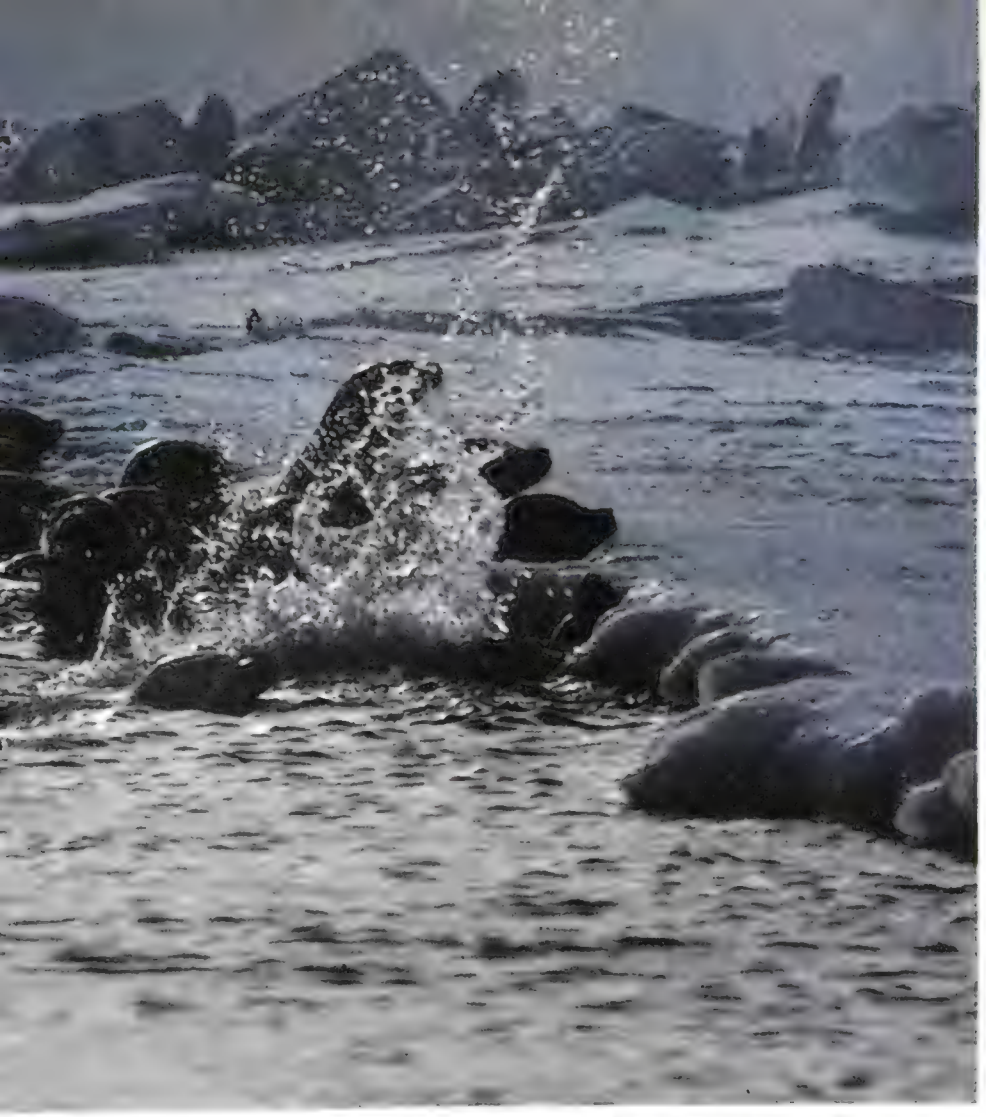
A group of nonbreeding seals, possibly subadults and possibly all males, take the air in a long lead.

A pup waits for its next feeding beside a pressure ridge. Pups go from 15 to 100 pounds in three weeks.

able, so three of the diver's fingers must share, while thumb and forefinger are on their own.) When Bill's hands got too numb to function, he would hold the camera between his knees and raise his arms above his head. The ascending air ballooned the gloves. From the now-spacious neoprene fingers, he withdrew his own. He balled his fist in the glove's palm and worked his fingers. After a minute, they were warm enough to return to their places and resume their tasks, adjusting exposure.

For the harp seals, of course, no such odd postures were necessary. The seals did without gloves, low-pressure valves, inflated suits, spare tanks and face masks, and they seemed to be perfectly comfortable. The Scandinavian design of the Unisuits was good; the pinniped design was better.

The seal's pelt is its first, scanty line of defense against the cold. In phocid seals like the harp seal, the hair is not so effective a barrier to heat loss as in otarid seals like the fur seal, but it helps a little. (The phocids are the crawling seals, descended from otter-like land carnivores. They have no external ears, and their power is in their hind flippers. The otarids are the walking seals, descended from a bearlike land carnivore. They have small external ears and their power is in their shoulders and front flippers.) In both seal families, the hair grows in bundles; in each bundle a single flattened guard hair protects a cluster of



Smooth edges indicate that the lead has been open for some time. Seals will travel in the same group.

The very functional eyes of a pup also give it appeal. If a human lies down on ice, pups will approach.

underhairs. The underhairs trap air bubbles, which serve as insulation. In fur seals, each cluster has as many as 70 underhairs, trapping so much air that the skin beneath never gets wet. In the phocids, there are only two to five underhairs in each bundle. The harp seals, then, and the rest of their phocid cousins must rely more on the thermal layers underneath the pelt.

When a phocid seal enters the water, a vascular constriction cuts off blood flowing to the skin and blubber. Skin temperature drops until it is only about one degree above that of the water, just warm enough so that the skin does not freeze. The temperature gradient between skin and water is so slight that little heat is lost across it. Within its two-inch blanket of blubber, the harp seal stays toasty.

The advantage of the phocid method over otarid is that thermal regulation is easier and more precise. Where an otarid like the fur seal must wave its hind flippers in the air to cool off, just as a husky pants and lolls its tongue, a phocid like the harp seal simply relaxes the arterioles in its skin, which fills with blood and releases body heat. The phocid plan is the more successful. Whether because of advantages in thermal regulation, or in its rear-flipper drive, or in something else, there are more than twice as many phocid models, and they range more widely, through more diverse habitats. The most cosmopolitan seal of all, the harbor seal, is a phocid.

The harp seal's Unisuit of blubber, besides warming the seal, streamlines it, encloses it as a pressure vessel on deep dives, and serves as a fuel reserve in those lean times when the seal eats little, as in the breeding season. The seal's Unisuit, unlike the neoprene kind, is malleable, molding itself to the flow of water. Ripples form in the seal's skin and blubber, eliminating turbulence and maintaining laminar flow.

The animal within the suit has undergone modifications too, since its days on land as an otterlike animal. Its organs are those of a land mammal still, with a few extra wrinkles, like the hepatic sinus and caval sphincter of its circulatory system—but those land-mammal organs have developed special capabilities. A harp seal can dive deeper than 600 feet and stay under for some 30 minutes. Diving, the seal does not draw a deep breath; it exhales, for inflated lungs would cause trouble at depth. The seal stores its oxygen in its blood, which is almost twice as plentiful, proportionately, as that of a human being, and in the myoglobin of its muscle. Underwater, the seal enters the state called bradycardia. Its heart rate drops from around 100 beats a minute to as few as four. Bradycardia occurs also in muskrats and beavers, in cetaceans, even in experienced human divers, but in seals it is most pronounced. Old seals, like old Indian fakirs, have learned to control their heart rates better than novices. In older seals, bradycardia begins sooner, slows the heart more, and lasts longer.

When the seal dives, oxygenated blood leaves its extremities and pools in the brain and vital organs. Much of the muscle activity is anaerobic, so the seal

draws on its oxygen sparingly. The seal's nostrils in their relaxed state are closed. The moustachial pad presses against the nasal septum, sealing the nostrils, and the pressure of the dive only presses the pad tighter. As the depth increases, the lungs flatten, the seal's flexible ribs bend, and its whole being becomes more serpentine under the weight of the water. The pupils of the great eyes dilate to engulf the whole iris, and the seal hunts in a dimness that to the human eye would look black.

The seal's tissues tolerate high carbon-dioxide levels. In a novice human diver, carbon dioxide trips an early-warning system, sending a surge of panic through him, and he looks to the surface. Experienced divers learn to ignore the signal and stay down a little longer. Seals stay under for 20 to 30 minutes, then make their way upward calmly but fast. The green glow above rapidly becomes brighter. The glow resolves itself into the undersea ice sculpture of the harp seal's Emerald City. The seal picks the bright vein of a lead, or the sunny circle of a breathing hole, and it heads there. Its pupils narrow, its lungs uncrinkle and expand, its ribs unbend, its serpentine body becomes more seallike. It skims past the ice walls of the Emerald City, bobs above the floating slush ice, and blows open its nostrils. It breathes.

A hazard for all respiring life in cold seas is the freezing of breathing hole or ice lead. One of the purposes of the bowhead whale's limousine-sized pate is to break through the ice, and it can handle thicknesses of more than a foot. The walrus' dense skull is designed for a somewhat thinner exigency—ice up to eight inches thick. Bill and Bora lacked the heavy-duty craniums. In the Gulf of St. Lawrence, when the sun dropped low, temperatures plummeted, the slush ice in the leads began to freeze, and they had to be careful.

Once, swimming up toward the light after the day's last harp-seal picture, Bill rose as if to pass through the slush, and instead bumped into it. The slush was solid—the lead had frozen. Bora rose beneath. With the quick comprehension Bill values in his friend, without wasting time in testing the surface himself, Bora coolly began unharnessing his tanks for use as battering rams. He was just swinging them off when Bill, feeling his way along the translucent ceiling of their prison, found a weak spot he could poke through to the sky.

Their internal alarms ceased clanging. For a mo-

A mother in the water coaxes a pup to swim. The pup is already wet and has been in the water at least once.

Raising her head and arching her neck, an adult rejects a pup not her own. Pup's fur is dry and translucent.

ment, though, they had known the polar seal's danger of finding itself locked out from life. Safe above the surface, spitting out their regulators, they knew the seal's gratitude, after the ice relents, for the sweetness of air.

Another time, Bora and Bill sat together at the edge of a lead, their legs dangling in the black water. As they checked over their gear before diving, they happened to look up. They saw the lead closing. The floe on the far side was advancing, and the lead, which a moment before had been 20 feet wide, now was 15. While they gazed, it closed to ten. Bora watched the pressure ridge buckling up. *It looks like a bulldozer is pushing it,* he remembers thinking. Then he swung his legs out of the water.

Once, diving under ice in the Gulf of St. Lawrence, Bill swam toward a breathing hole. Above, he knew, a female harp seal was lying on the ice. Beneath the hole a male seal had stationed himself upright in the water. Seeing Bill, he vocalized and blew bubbles. The dollop of air wobbled up, like the talk balloon in a cartoon, but empty of words.

Bill thought he could read the missing language. It was something like "scram." He has never read in any monograph, or heard firsthand from any scientist, that bubble-blowing in marine mammals is a warning, but he's sure that is what it is. "I don't have anything to support it, but that's just what's happening. There's always a sound in association with the display. I just know that's what's happening."

From the green depths below the male seal, other dollops of bubbles were rising. It was as if a whole hierarchy of males was waiting in tiers beneath the female, working out, through threats and bubbles, their positions on the dominance ladder. It might have been interaction of an entirely different sort, of course. Bill didn't know. He couldn't see it. One of the things that draws him to the sea is the way it has of concealing so much more than it discloses.

The lower seals were not visible, but their sound filled the sea.

The coughs and barks of the seals on the ice were just the iceberg's tip of harp-seal noise. There was a separate world of sound beneath. Bill and Bora recorded it with hydrophones. In vocalizing under the ice, the seals enjoyed making a simple sound and repeating it once. Most common was a birdy *oink oink.* Two was their favorite number. The harp seal conversation had less variety than that of whales. It sounded more rudimentary. Whales have inhabited the sea for twice as long as seals, and they seem to have used the extra 30 million years well in building their vocabularies and refining their underwater elocution.

The individual harp seal's monologue was not particularly pretty music. But when you stopped listening to it, and began hearing instead the background it merged with—the collective babble of the species—the music was something else again. It was like ignoring the scrape of a single branch for the sound of the wind in the forest. The voices blurred with distance into a multitudinous whisper. The whisper suggested whole nations under the ice and the vanished nations that preceded them. It might have been a song of history —the murmur of the thousands of generations that had wandered these icy seas at the top of the planet—and it was beautiful.

This mother has identified her own pup by smell and sound. Now that it has been accepted, they nuzzle.

The mother here is still wet after coming out of water; her hungry pup started nursing immediately.

Diver plunges through seal
hole with extra camera;
rope is a guide to the surface.

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(—March "Letter from Europe" column, R & T.)

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# PORSCHE+AUDI
## Nothing Even Comes Close

*Coalbrookdale at Night,* painted around 1800 by Phillipe Jacques de Loutherbourg, captures look of hellfire at what is probably Bedlam Furnaces, where everything, including kitchen stoves, was made.

*By William and Rita Vandivert*

# A British museum honors flaming birth of industry

*Here, 'in England's green and pleasant land,' blast furnaces and foundries belched fire and the world's first iron bridge took shape*

The world's first iron bridge is 200 years old. The second of this month marks the anniversary of the joining of its two half-arches to form a single span, soaring across the Severn Gorge in England's West Midlands. It remains a monument to the Shropshire ironmasters who, in 1779, were the best in the world.

An unusual museum complex has been established around the old site in Telford by the Ironbridge Gorge Museum Trust. Five indoor and outdoor museums stand along three miles of the curving Severn, either right beside the river or high on the steep banks. Here are preserved the very beginnings of modern industry.

Next month, the American Society of Civil Engineers will designate the Iron Bridge an International Historic Civil Engineering Landmark. The Smithsonian's Museum of History and Technology already has a small display of contemporary prints of bridge scenes and some ceramics—a nod to the fact that American industry sprang from the same source as British.

The Ironbridge area has been called "cradle of the Industrial Revolution" for good reason. Less than a

Blists Hill Blast Furnaces, nucleus of an open-air museum, look as though they had produced inferno in the mid-19th century when they were in full use. At left is the restored North Engine House.

mile upriver from the bridge the valley of Coalbrookdale (locally pronounced "Cobroodale") is where Abraham Darby, a Quaker from Bristol with experience as a pot founder, leased an old blast furnace, repaired it and in 1709 first produced iron made with coke instead of charcoal. To get the coke he burned local coal on the valley floor. He cast the iron into his newly devised molds which made iron cooking pots and trying cauldrons thinner-walled than had ever been possible.

The coalfield Darby used covered some 24 square miles with seams up to 42 feet deep, high-quality ironstone, limestone for flux, fireclay for furnaces, brick clay, potter's clay and even some white clay. The valley walls exposed some of the seams so they could be mined with horizontal shafts. A stream flowed into the pool above the furnace. There was plenty of labor and Severn sailing barges called trows for transportation.

Coalbrookdale turned out impressive developments —steam-engine cylinders in the 1720s, industrial castings and tools, household articles. The furnace bellows were powered by a water wheel. To cope with a possible drought, a steam engine was built in 1743 to pump the used water back into the pool. The first iron rails came from here, and iron-wheeled vehicles to run on them. And it was here, in 1778-79, that Abraham Darby III cast the complete Iron Bridge—378 tons with some members 70 feet long (SMITHSONIAN, February 1972).

On July 5, Prince Charles will open Coalbrookdale's new Museum of Iron in the Great Warehouse. It is topped by a brightly painted cast-iron clock tower of 1840s vintage. Eighteenth-century houses, many with iron lintels and window frames, stand nearby.

On the road descending to the Severn is the Coalbrookdale Institute, built in 1859 to offer literary, art and science classes. Below it are the restored Rose Cottages which are dated 1636 and are probably the oldest buildings in the area. At the foot of the dale, where the Severn flows, is the Victorian Gothic warehouse from which finished goods were shipped away by river. It is now a key starting point for visitors.

*Museum complex at Ironbridge*

No riverboats ply the Severn today, for flood control limits water level. Every bit of the green and pleasant valley has been mined and has subsided or slipped. Undergrowth covers old mines and furnaces, even throughout the museum area.

It's a wonder that the Iron Bridge is still standing. A few years ago engineers stabilized its stone abutments with an inverse arch sunk into the riverbed.

"The span is reckoned to be about a foot shorter than when the bridge was built," says Neil Cossons, director of the Museum Trust. Probably its crude tolerances allowed it to survive. Cossons points out there are no bolts or rivets, just dovetails and mortise joints secured by pegs and wedges.

When the furnaces were working at full blast, smoke, noise, fumes and ash assailed laborers. Charles Dibdin, a famed English dramatist, noted around 1787: "Coalbrookdale wants nothing but Cerberus to give you an idea of the heathen hell." Yet trees still crowned the hills and showery breezes swept up the valley, scouring off the soot.

The ironmasters of those days were skilled at handling material. They built their blast furnaces against hillsides so that they could tip in coke, ores and fluxes from the higher slope. When, by 1785, the Coalbrookdale Company's operation had become the largest single iron-making concern in the world, its newer mines, furnaces and other works had not only sprawled along the valley but vaulted the heights behind it to spread miles north and east.

These distant sites had to be linked with the Severn. The Shropshire Canal answered the need. It had inclined planes on which to raise and lower wrought-

*Frequent contributors, the Vandiverts wrote most recently about the English landscape artist "Capability" Brown in the August 1978 issue.*

Historic Iron Bridge stretches nearly 100 feet across Severn Gorge at Ironbridge, now part of Telford.

Humpbacked, like stone bridges of the 1700s,
it linked mines and mills on each side of the river.

Cast-iron clock tower tops
Coalbrookdale's new Museum.

Intricate framework of cast iron forming bridge
has no bolts or rivets, just carpentry joints.

Cast-iron wheel of a mine cart fits
cast-iron rail outside Museum.

*Museum complex at Ironbridge*

Children play among cast-iron cauldrons near original Abraham Darby furnace site, Coalbrookdale.

iron tub boats through the hilly terrain. The largest of these, the Hay Incline, was the final link with the Severn and rose to a vertical height of 207 feet—equivalent to 27 canal locks. It could pass a pair of six-ton tub boats in fewer than four minutes instead of the three hours or so required by lock, with an attendant loss of a great deal of water.

Both the canal and the inclined plane lie within the 42-acre woodland expanse of Blists Hill Open Air Museum. And just below the canal three blast furnaces built by the Madeley Wood Company between 1832 and 1844 were operating until 1912. They now lie in ruins, a welter of tumbled brick and rock littering the casting floors at their base so that they look like a Piranesi etching of ancient Rome. The wreckage contrasts sharply with the cleaned-up appearance of the other sites. Blists Hill is a cornucopia of industrial memorabilia. Just beyond the blast furnaces is the restored North Engine House, containing a great vertical blowing engine of the same type that originally worked here.

Farther up the hill, visitors can inspect a sawmill, pottery, brick and tile works, printing shop, reconstructed railway siding with steam locomotive and wagons, and steam road roller and lorry. Near the canal is a minehead complete with a steam winding engine, headgear and a mine shaft reopened to a seam of fireclay 60 feet down. This mine was one of several in Blists Hill which were driven down through successive seams of different clays, coal, ironstone and limestone. It was abandoned in 1941.

For visitors with stout hearts and footwear there is still more to see: a section of roadway and a tollhouse from the Holyhead-to-London turnpike designed about 1820 by Thomas Telford, the famous Scottish engineer. His road cut the 153-mile journey between Shrewsbury and London from three days to 16 hours.

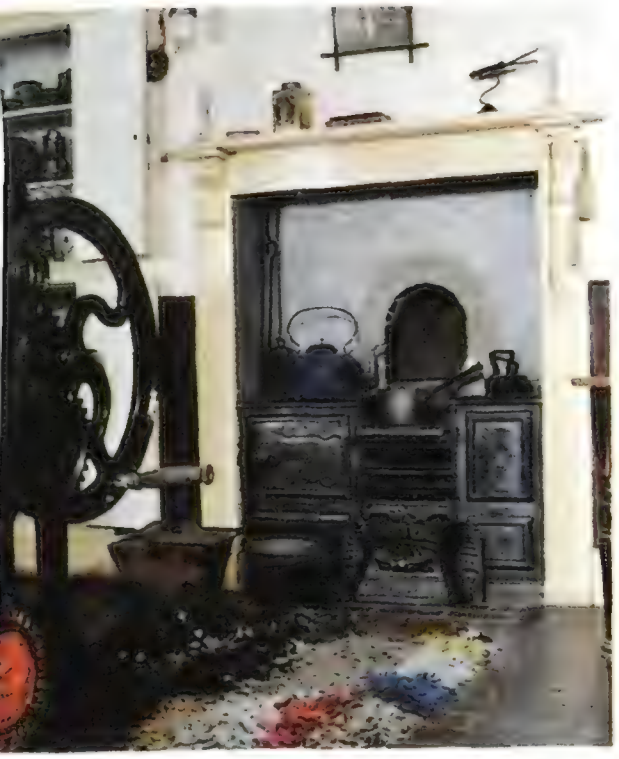
Just below the blast furnaces the Museum Trust is reconstructing a wrought-iron works which, when completed, will provide the first full-time working demonstration of iron technology. Here a work force of ten will make iron bars and strips. It will be the only source of new wrought iron now operating in England, and the chances are it will be self-supporting.

Not many yards from the bottom of the Hay Inclined Plane is the entry to the famous Tar Tunnel, a 1,000-yard passage driven under Blists Hill that unexpectedly struck a natural flow of bitumen which was worked for many years. And across the river from the tunnel is a large tile factory, recently derelict. This is another museum research-and-restoration project, destined to become a demonstration plant.

At the eastern end of the three-mile stretch of the Gorge is the Coalport China Works Museum. An old bottle kiln is being used to display the finest of Coalport china. Outbuildings show stages of porcelain production, and craftsmen from Coalport's present factory in Stoke-on-Trent come to show their skills.

The Museum Trust is disinclined to take on catering or hotel sidelines, although these are nearly nonexistent locally. The Trust wants to maintain a balance between the impact of tourists and the character of Coalbrookdale and Ironbridge as villages where people live and work as they have since the 1700s.

Blists Hill's annual "Steam in Ironbridge" weekend celebrates big role steam engines played in industry.



Severn Warehouse and Wharf (center), west of the bridge, was the shipping point. Reconstructed kitchen (left) shows iron coal range and implements of 1880s. Work horses (right) are at Blists Hill.

# HOW TO

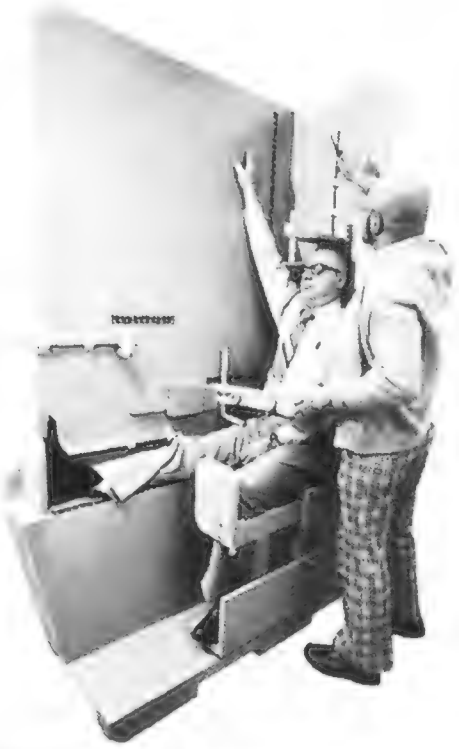
# BUILD A BOEING.

The new Boeing 767 won't leave the ground until 1981. But it has already flown 17,000 hours at speeds near the sound barrier at pressures similar to altitudes up to 35,000 feet.

Engineer Dick Day, assistant Carol Hutson, and a team of Boeing people have been putting aerodynamically-perfect scale models of the 767 through an exhaustive series of wind tunnel tests for more than four years.

These tests help verify engineering calculations about fuel efficiencies and the integration of lightweight structural components, as well as predict flying characteristics.

As advanced as this technology may be, it is still people ingenuity that makes it all possible. And that's true in every stage of design and construction of a Boeing jetliner.



For it's all too easy to think a Boeing is built on an enormous, fully-automated assembly line.

Actually, every Boeing on the line is custom-built. A meticulous hand-made construction of literally millions of wires, aluminum panels, struts, ribs, levers, wheels, dials, motors, rivets, pumps, electrical devices and countless subassemblies.

But before any new model

is built, there is a full-scale dress rehearsal. That's what these pictures show. Besides extensive wind tunnel tests, a detailed mockup of the aircraft is constructed.

So even before the 767 gets off the ground, we know it will.

Machines make it easy, people make it possible.

THE BOEING FAMILY

*Getting people together.*

*By Daniel Jack Chasan*

# In this zany race anything goes– we mean *any*thing

*The vehicles are called 'kinetic sculptures,' but after all, this is California, where even the silly season has become an art form*

Race organizer Hobart Brown (standing) inspires crew of "Bigger Better Ball Bearing Banana."

Hundreds of people stand shoulder to shoulder looking expectantly over the water. They're like a middle-American crowd in *Close Encounters* waiting for the aliens to come. A spaceship appears. A squat, shiny, two-passenger affair, it rolls down a concrete boat-launching ramp and hits the water with a plop. Quickly, the hatch covers are thrown back and two large green men clutching paddles climb up on the fuselage and start paddling. Some people cheer. California Congressman Don Clausen, in top hat and tails, looks on approvingly. The craft moves slowly but steadily out on Humboldt Bay, the largest indentation on the Pacific Coast between the Columbia River and San Francisco. People watch from rowboats, canoes, inflatables, a trimaran laden with cold chicken and beer, aluminum skiffs with motors on their sterns.

No one watches the spaceship for very long. It is not the first, last or most bizarre of nearly 40 strange craft to hit the water on this Saturday morning. There's another one coming down the ramp; a long body, high, yellow sides, a long orange canopy with two dips in it. The craft looks like a carnival ride that has escaped from its carnival. It, too, splashes into the Bay and is paddled out toward the distant shore.

And here comes this *thing*, like a runaway truck tire rolling down the ramp. Actually it is two huge inner tubes set into two enormous plywood rings, which in turn are joined by wooden slats. Inside, a barefoot man in jeans holds onto a horizontal bar and walks endlessly along the wooden strips that run inside the circle of slats. He is walking a treadmill, like a hamster in a wheel. But this human hamster is getting someplace. The wheel wobbles from side to side when it hits the Bay, but it stays basically upright and spins out into deep water.

"Bubble Mobile," a giant treadmill, churns across Humboldt Bay as exhausted treader peers out.

It's not all fun and games. Look into the wheel an hour or so later, when it's closer to the opposite shore. The man inside is still trudging away, feet and ankles immersed in cold saltwater, mouth hanging open with effort. And farther out, a 15-year-old boy named Andy White is rowing a wheelchair equipped with foam flotation across the Bay. He hasn't rowed before and he's having a rough time. He stops rowing, and friends pull alongside in an aluminum skiff. He has evidently been slipping down in his chair. Now, taking a roll of tape from the skiff, he wraps loops of it around his

*Photographs by Christopher Casler*

"Wounded Knee" is a floating wheelchair rowed by 15-year-old Andy White who really uses it.

Four pedalers keep the heavy "Bullship" going as it leaves the shore of Humboldt Bay.

Green men emerge from the hatch of "Space Case" and get down to the mundane job of paddling.

body and the chair back, strapping himself in. Since his legs really are paralyzed, strapping himself to the chair while crossing deep water seems a bit risky. But he does it and rows on.

Serious stuff. And yet, how serious can it be when Andy White is sharing the Bay with that long, yellow, two-piece metal dugout with two narrow paddle wheels on each side, pedaled by four men in top hats and tails, a fifth man in top hat and tails steering, a woman in a wide straw hat and long, green patterned dress sitting high up amidships doing live broadcasts for local radio? What are these people doing here, anyway? Are they nuts? A toothless old man on a street corner has observed this very morning, "If you *told* them to do it, they wouldn't."

But no one has told them, and here they are: nearly halfway through the Sixth Annual Arcata to Ferndale Cross-Country Kinetic Sculpture Race. Arcata is a bit north of Eureka, California, and Ferndale a bit south. Eureka is the main town on Humboldt Bay—redwood logging country with lots of lumber and pulp mills, high unemployment, ornate Victorian houses left over from more prosperous times, a residue of the "counterculture" that has been here long enough to blend in. And Hobart Brown.

Hobart is an enterprising, shy-voiced metal sculptor who runs an art gallery on the main street of Ferndale. In 1969, he and another sculptor, Jack Mays, started what is by now an annual sculpture race in which elaborate, unmotorized constructions are timed, two by two, for three-block runs through the center of Ferndale. In 1974, Mays and Brown decided to liven things up a bit by starting a cross-country race for the contraptions. The result is an annual three-day, 36-mile endurance run over a course that includes country roads, city streets, Route 101, hard sand, loose sand, heavy grass, the Eel River and Humboldt Bay. Each vehicle must be human- or wind-powered, and must carry all necessary gear from start to finish. There may be a pit crew equal to the number of drivers. If a sculpture gets stuck or loses a drive chain, only drivers and pit crew may push. For violating any of these or various other rules, or for accepting a tow on water or land, a sculpture gets minutes or hours added to its time. As a veteran driver mused, "It's like spending three days in an amusement park."

The race starts at the town square of Arcata when the noon whistle blows on Friday. The vehicles arrive all morning, lining up along a blocked-off street. Elderly Western couples, classical counterculture types and young blue-collar families look them over.

*Chasan's most recent* SMITHSONIAN *article appeared last January and dealt with agriculture's new weapon against insects.*

Some sculptures are designed to win, others to complete the course in style. One of the former is the "Red Piece," a tandem ten-speed bike with a wraparound shield of polyurethane foam, fiber-glassed and painted bright red, which has been brought all the way from Los Angeles by two guys who really want first place. One of the latter is delivered to Arcata by a full-sized semi. As a crowd gathers, the back of the semi opens and out slides the white and orange "Modified Thunderbolt Greaseslapper," 1,290 pounds of welded metal tubing, equipped with 12 wheels, two propellers, functioning lights, a CB radio, a four-wheeled trailer to carry four orange metal pontoons overland, three sets of pedals, a motorcycle transmission, seats well above any conceivable water line, and three drivers attired in white tuxedos, white caps, white shirts with ruffled fronts. Style.

*Rumbling into the first steep turn*

As noon approaches, drivers congregate around a large statue of William McKinley. The whistle blows. Drivers stampede toward vehicles, and the race is on.

Sculptures roll between sidewalks packed four deep with spectators, then through a warehouse section where men stare incredulously from loading docks, then out into farm country where people crowd pickups parked at crossroads. The heavy yellow "Bullship" rumbles into its first steep downhill turn. The four drivers, pedaling side by side high above the row of big back wheels, are apprehensive, to say the least. They have brakes, but this is ridiculous. Two teenagers watch from the Arcata Creamline Dairy. Cows graze obliviously. "Bullship" survives.

Eventually, all roads lead to a steep sand dune. Now virtually all the machines will have to be pushed and pulled across miles of loose sand. The spaceship rolls up and the two green men jump out. One fastens a yellow nylon rope under the "bow" and a pit crewman ties it around his waist. Slowly, laboriously, the 800-pound vehicle is pulled and pushed up the dune. Soon, people pushing heavy vehicles are strung out over miles of sand, straining for every inch. Wheels sink in. Feet slip. The sun beats down. Intense effort mixed with camaraderie equals something like recreational piano moving. "It would be nice if all this could just be over," mutters a man pushing "Bullship."

"It'll be just like last year," says another. "By the Bay crossing, you'll be all psyched into it again."

An onlooker watches the two green men and two helpers haul the spaceship up a dune. He says, "I wish someone could take a bunch of those people, 65-year-olds, who say 'young people don't do a thing nowadays' out here and show them *this*."

The dunes end in a precipitous drop. Drivers and

Ken Santos pedals the "Fabricator One" which was fabricated, says its flag, in a bike shop.

The "Flying Galumpkie Brothers" (real name: Hrynkiewicz) flail the water on their way to victory.

pit crews hold onto the vehicles for dear life, dig their feet into the sand to slow their descent, fasten ropes to the vehicles and hang on. As one vehicle plunges over the edge, a straining driver mutters, "There comes the end of the world."

He's wrong. They all make it down. In fact, nearly all the 40 starters make it to the first day's destination, the Tudor-style Eureka Inn, where the first 20 finishers get free rooms. The first sculpture arrives at 1:58 P.M., the last around 10:15 P.M. As daylight fades, drums and horns can be heard from the windows of the Inn. It sounds like a parade. After a fashion, it is. Up F Street, preceded by the Male Chauvinist Pig Marching Band, comes that yellow four-wheeled metal dugout, the "Bigger Better Ball Bearing Banana." The men in top hats are aboard, surrounded by walking girls in flowing white vestal virgin robes. One of the men is Hobart Brown.

Next day, the sculptures roll out of the parking lot and head for Fields Landing, where they will all assemble and then enter the water, one by one, for the crossing of Humboldt Bay. Somehow, everyone survives the log trucks and semi tankers and Greyhound buses whipping along Route 101. At Fields Landing, Congressman Clausen says a few words. A cannon booms three times, scaring the wits out of unprepared spectators. The "Modified Thunderbolt Greaseslapper" rolls down the launching ramp into the water.

The "Greaseslapper's" forward progress is slow, stately and brief. A bad weld gives out, a propeller shaft breaks, and the sculpture drifts southward on the incoming tide, later to be towed across. Most competitors are luckier. Some aren't. The "Yellow Submarine," a standard fiber-glass septic tank equipped with wheels, portholes, pontoons and turrets, hits the Bay and lists heavily, dead in the water. Through the portholes, hands appear clutching paddles, then bailing with a red coffee can, then making obscene gestures at good-natured hecklers. The "Yellow Submarine" drifts onto the beach. It, too, must be towed.

On the opposite shore, while seaweed drips from wheel spokes, the sculptures head due south, first on pavement, then on two sandy ruts behind the dunes. On firm sand, yesterday's winner, "Chariot of the Frogs"—a stubby one-man bike with raised pedals and a pontoon on either side—whizzes along under its own

The "Modified Thunderbolt Greaseslapper" moves along an easy stretch of paved roadway.

Crew and passengers are called out to aid the "Concord JRT" across rough passage.

power, making good time. Then the wheels hit loose sand. The driver gets off and pushes. When the footing seems firmer, he climbs back on. The wheels still sink. The bike won't move, won't stay upright, tips over. He curses the bike, the sand, his current fate. "And I told my pit crew I didn't need them any more!" He looks back up the road. The tough beach grass waves in the wind. Gray drift logs litter the sand. The sea booms off to the left. There is no one in sight to help him. No one.

The sand is rough for almost everyone. The kids pushing the "Frog"—a single wide front wheel, four big bicycle wheels in back, four seats side-by-side above the wheels—have stopped to rest. One kneels in the sand, leaning against the machine. They're very tired. They push some more. One girl evidently spots people she knows up ahead. "I hope they don't wave," she says. "I'll heave a rock at them if they wave."

The red, two-person roadster-style "Love Schooner" is stopped at the side of the road. The two women who have been pushing it sit there in the wind, silhouetted against the blowing grass. They're tired. Their pit crew has left to go to work. Their front axle is starting to give way. Eventually, they accept a tow.

Crab Park, where everyone camps for the night, is windy and cold, despite a huge driftwood fire. A welder ferries his tanks over and repairs battered sculptures, working into the night.

The next morning—a fortunately sunny Sunday—all the sculptures cross a slough, Cannibal and Cock Robin Islands and the Eel River, then roll along country roads toward the finish line in the damp grass of Ferndale's Firemen's Park, near the local Little League field.

The "Red Piece" finishes first. Fourth today but first overall are last year's winners, the "Flying Galumpkie Brothers," two ten-speeds flanking a buoyant fuselage made of three metal garbage cans joined end-to-end. As the Galumpkies approach the line, they hold up their thumbs and shout, "We're number one." Across the line, they jump out and hug each other.

Out on the road, the sinister black two-man "Typhoid Mary" is cruising smoothly between pastures, making perhaps ten miles an hour. Slowed down during the Bay crossing—"this thing has all the hydrodynamics of a brick"—up until two this morning fixing the right rear wheel, the drivers have been doing fine. Suddenly, the right side pedals spin uselessly. The chain to the right rear wheel is loose. "Is it off?" asks Darrell, on the left. "All the way off," says Randy, on the right. They pull onto a grassy shoulder, a van stops behind them, and their pit crew jumps out. It's the first time they've talked since this morning.

The chain is back on. They pedal hard, picking up speed. The chain goes again. Randy looks down. "I can't fix it. It's the axle. I could fix the wheel but not the axle." The "B II Bomber," a slower version of the "Flying Galumpkie Brothers," whips past. "Typhoid Mary" pulls over again. The crew jumps out. Looking after the disappearing "B II Bomber," someone says, "Those wheelbarrows . . . no . . . garbage cans got a tow on the Bay, so they're not that far ahead." It is possible to hook both sets of pedals to the left wheel. Randy wonders if it's worth the trouble. "How far?"

"Wounded Knee" gets a much-needed push along a stretch of soft sand. It finally finished 24th.

"Yellow Submarine," a septic tank in real life, started to submerge when it hit the water.

"A couple of miles."

"We'd better do it. Get the allen wrench."

Finally, they're on Ferndale's turn-of-the-century main street. People are sitting in front yards, on pickups, on wooden benches, standing several deep along the sidewalk, staring from passing cars, eating picnic lunches, drinking beer, taking pictures, waving, cheering. "That hundred yards with all those people cheering made it all worthwhile," Darrell says a little later.

But now they're past the crowd and not quite to the finish. The road slants upward. They lean into the pedals. "This is cruel and unusual," Randy mutters.

At last they're on a flat gravel road, pedaling toward the finish area, around the bend, in sight of the finish . . . and the chain slips again. If there's one thing they want to do, it's finish under their own power. The chain is replaced once more. They climb in, pedal very slowly, break into smiles—they've made it.

Reaching the finish line is quite an event. The weary kids pushing the "Frog" grin and start running. The two women pedaling the "Love Schooner" break into beautiful, happy smiles. Andy White, in his wheelchair, takes a single huge deep breath.

By the time the "Greaseslapper" comes across, the drivers have changed into crisp, immaculate white suits, clean shirts, clean white caps. The "Slapper" and its trailer roll across on 16 wheels.

Back downtown, respectably dressed people are walking slowly through the dim light of Hobart's gallery, looking at the surprisingly good landscapes hanging on the raw plank walls, circling the tall bulk and gleaming copper facets of Hobart's own abstract *Caves of Mercury*. Out on the street, Hobart himself, in a dirty black tuxedo, is pushing at the very rear of the "Ball Bearing Banana." Two of the men in top hats are still pedaling. The drummers are still drumming. The vestal virgins are still bright-eyed with excitement, although blank-faced with fatigue. Hobart gives the crowd in front of the gallery a restrained wave.

As the "Banana" approaches the finish line, the drummers pick up the beat, and the whole crew starts singing. Faces brighten. Hobart keeps pushing to the very end, top-hatted head bent forward.

After they cross, the men in top hats and the girls in white robes hug each other, kissing, singing, posing for pictures. Hobart passes around a bottle of Rémy Martin. People kiss him. Hobart walks off, mutters, "What I'd really like is a drink of water," gets called back. Everyone starts chanting, "We love Hobart. We love Hobart." They mean it.

Hobart Brown's "Ball Bearing Banana" maintains all its dignity as crew pedals it across the bay.

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*—William Stiles, Bronx, New York*

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# Fill in your Beethoven

## Romantics

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**283846. Bizet: Symphony in C; Mendelssohn: Symphony No. 4** (Italian)—Stokowski, National Sym Orchestra (Columbia)

**285049-285040. Borodin: The Three Symphonies; Overture and Polovetsian Dances from "Prince Igor"**—Andrew Davis conducts the Toronto Symphony in highly praised performances of these exotic scores (Counts as 2—Columbia)

**276808. Dvorak: Symphony No. 7**—Giulini conducting London Symphony (Angel)

**230433. Dvorak: Symphony No. 9** (New World)—Bernstein conducts New York Phil. (Columbia)

**262337. Elgar: Symphony No. 2**—Solti and the London Philharmonic (London)*

**230417. Franck: Symphony in D Minor**—Bernstein, New York Phil. (Columbia)†

**277392. Granados: Goyescas**—"scintillating brilliance astonishing!"—*N.Y. Times* Alicia de Larrocha (London)

**228684. Grieg: Peer Gynt Suites 1 and 2; Bizet: Carmen Suites**—Bernstein, N.Y. Phil. (Columbia)

**287854. Liszt: Les Preludes; Prometheus; Festklange**—Solti and the London Phil give dazzling performances of these three colorful symphonic poems (London)

**289892-289893. Liszt: Piano Music**—fantastic performances by the legendary Ervin Nyiregyhazi (Counts as 2—Columbia)*

**278564. Mendelssohn: A Midsummer Night's Dream** (complete)—Andre Previn, London Symphony (Angel)

**232504. Mussorgsky: Pictures At An Exhibition; Night On Bald Mountain**—Ormandy, Phila (Columbia)

**213330. Offenbach: Gaite Parisienne**—Bernstein, N.Y. Phil. (Columbia)

**176578. Rachmaninoff: Piano Concerto No. 2;** etc.—Gary Graffman; Ormandy, Phila. Orch. (Columbia)

**277038. Rachmaninoff: Piano Concerto No. 3**—Lazar Berman; Abbado cond. London Sym. (Columbia)

**203745. Rachmaninoff: Piano Sonata in B-Flat Minor; Three Etudes—Tableaux; Prelude in G Sharp;** etc.—Vladimir Horowitz (Columbia)*

**230409. Rimsky-Korsakov: Scheherazade**—Bernstein, N.Y. Phil. (Columbia)

**232116. Rossini: William Tell Overture**—plus works by Herold, Suppe, Thomas—Bernstein and the New York Phil. (Columbia)

**285411. Saint-Saens: Symphony No. 3** (Organ)—Raver (organ); Bernstein, New York Phil. (Columbia)

**234237. Schumann: Piano Concerto; Mendelssohn: Piano Concerto No. 1**—Serkin; Ormandy and the Phila. Orch. (Columbia)

**276279. Schumann: Piano Sonatas No. 1, 2**—Lazar Berman (Col./Melodiya)

**278499. Sibelius: Symphony No. 1; Swan Of Tuonela**—Stokowski, National Philharmonic Orch. (Columbia)

**250795. Sibelius: Symphony No. 2**—Tauno Hannikainen, The Sinfonia of London (Columbia Musical Treas.)

**225888. Smetana: Moldau; Bartered Bride Overture, Dances; Dvorak: Carnival Overture**—Bernstein, N.Y. Phil. (Columbia)

**268482. Johann Strauss: Tales From Vienna Woods; Die Fledermaus Overture;** others. Bernstein and N.Y. Phil. (Columbia)

**287649. Johann Strauss: Graduation Ball**—this ballet score is a pure delight! Dorati, Vienna Philharmonic (London)

**275628. Richard Strauss: Also Sprach Zarathustra; Till Eulenspiegel; Don Juan**—Solti conducting Chicago Sym. (London)

**284216. Richard Strauss: Ein Heldenleben** (A Hero's Life)—Lorin Maazel, Cleveland Orch. (Columbia)†

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**255620. Wagner: Organ Orgy**—opera excerpts transcribed for organ! Anthony Newman (Columbia)

## Mahler

**237024. Mahler: Symphony No. 1** (Titan)—Bernstein, N.Y. Phil. (Columbia)

**239046-239047. Mahler: Symphony No. 2** (Resurrection)—Bernstein and the London Symphony (Counts as 2—Columbia)*

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## Haydn

**257956. Haydn: Symphonies 101** (Clock) **and 103** (Drum Roll)—Bernstein and the N.Y. Phil. (Columbia)

**276790. Haydn: Symphonies 88** (Letter V) **and 96** (The Miracle)—Andre Previn, London Symphony (Angel)

**284232-284233. Haydn: The Creation**—this choral masterpiece is performed by Antal Dorati, The Royal Philharmonic, soloists, etc (Counts as 2—London)†

**229658. Beethoven: Piano Concerto No. 5** (Emperor)—Serkin; Bernstein and N.Y. Phil. (Columbia)

**230425. Beethoven: Violin Concerto**—Isaac Stern; Bernstein, New York Phil. (Columbia)

## Brahms

**267963. Brahms: Piano Concerto No. 1**—Artur Rubinstein; Zubin Mehta, Israel Phil. (London)

**238436. Brahms: Piano Concerto No. 2**—Rudolf Serkin; Szell, Cleveland Orchestra (Columbia)

**233130. Brahms: Symphony No. 1**—Ormandy and the Phila. Orch. (Columbia)

**283788. Brahms: Tragic Overture; Variations On A Theme By Haydn; Academic Festival Overture**—Bernstein and the New York Phil. (Columbia)

**293209. Brahms: Violin Concerto**—Isaac Stern in a brand-new performance with Zubin Mehta leading New York Phil. (Columbia)

## Tchaikovsky

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**231563. Tchaikovsky: Swan Lake** and **Sleeping Beauty Ballet Suites**—stunning performances by Ormandy, Phila. Orch. (Columbia)

**281550. Tchaikovsky: Symphony No. 6** (Pathetique)—Solti, Chicago Symphony (London)

**293191. Tchaikovsky: Violin Concerto; Meditation**—Stern, Rostropovich, National Sym. (Columbia)

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nd the Chicago
ny (London)

**Beethoven:**
**nies No. 5 and 8**—
y, Phila. (Columbia)

**. Beethoven:**
**ony No. 7; Egmont**
**e**—Stokowski, New
nonia (London)

**. Beethoven:**
**ony No. 9** (Chorale)
ndy and the Phila-
Orch. (Columbia)

**262493-262494. Bach: Suites 1-4** and more lute music played by John Williams on the guitar (Counts as 2—Columbia)

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# Bach

# Mozart

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## loderns

**67. Bartok: Concerto**
**Orchestra; Hungarian**
**ures**—Zubin Mehta,
I Phil. (London)

**44. Claude Bolling:**
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**o**—Pinchas Zukerman,
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**e for Flute & Jazz**
**o**—Jean-Pierre
ıpal, flute; Bolling,
o (Columbia)

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**Rodeo**—Bernstein,
Phil. (Columbia)

**473. Copland: Appalachian**
**ing** (Original version)—
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**112. Gershwin's Greatest**
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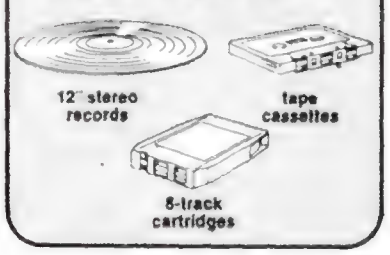


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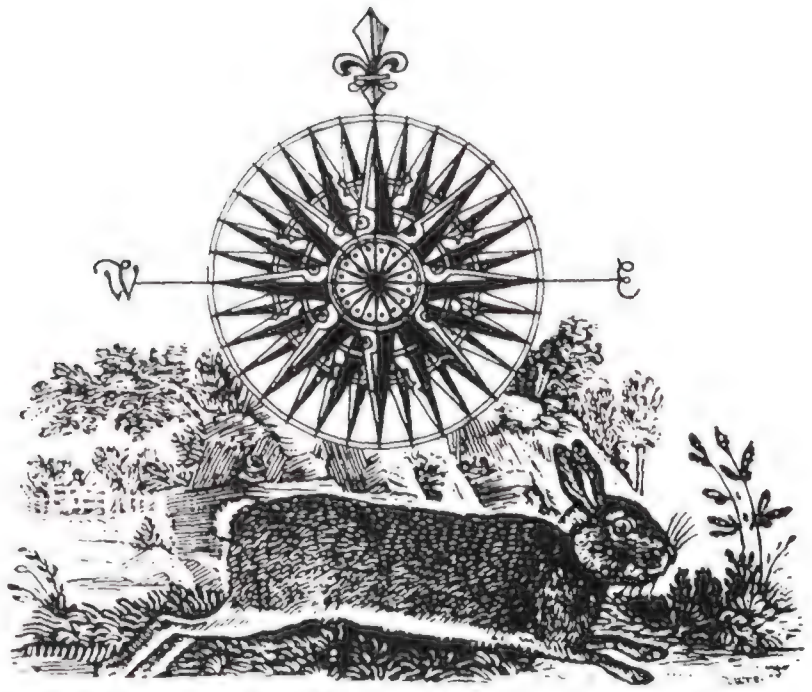
*By Timothy Green*

# Richard Adams' long journey from *Watership Down*



Compass rose and rabbit on *Watership Down* jacket are success symbols; some five million copies have sold.

*From a sanctuary on Britain's Isle of Man, the chronicler of rabbits and the Plague Dogs campaigns for marriage and animal rights*

The snow was over. Just a few patches remained in the crevices of the barren hills, whose summits lay shrouded in mist. Far below, beyond a narrow belt of trees, the dark sea was whipped by a stiff northeasterly wind. The Mull of Galloway, the southernmost tip of Scotland, and the Mountains of Mourne in Ireland, which are easily visible on a clear day, were obscured by the scurrying low clouds. The Isle of Man, a rugged slip of land rising from the Irish Sea, was wrapped in a world of its own.

"Manannán, the titular giant of this island, has swathed us in his cloak to protect us from strangers," says Richard Adams, as he strides across the wet grass of the desolate fell, his green Swedish parka zipped up against the wind, looking like some cheerful island gnome with a blue woollen stocking cap pulled down over his white hair. "He did it long ago to protect us from the Viking raiders, and he still shields us from intruders today."

Richard Adams treasures this privacy. Not long ago he was an anonymous British civil servant who whiled away the hours on the road to Stratford-on-Avon to see Shakespeare's *Twelfth Night* by telling his two young daughters a tale about a valiant band of rabbits that went on a long search for a new home. Today he is an international celebrity. For that story, begun on the spur of the moment, became *Watership Down,* the chronicle of Hazel, the quiet, determined leader; Fiver, the prophet; and Bigwig, the brave legionnaire who, like Horatius, made a heroic stand against the forces of the rabbit dictator, General Woundwort. The startling fact is that *Watership Down,* which was first turned down by three literary agents and four publishers, has become one of the decade's best sellers. Adams has won acclaim as one of the most formidable writers of imaginative fantasy of our age, a reputation enhanced by *Shardik,* the saga of the great bear who gave his life to save the children of the Beklan Empire from slavery, and *The Plague Dogs,* the story of Rowf and Snitter, who escaped the animal-research station in the Lake District, where they had been so cruelly maltreated, and set off on a series of extraordinary adventures.

The success of his books has enabled Richard Adams to escape too. "Think of all those poor buggers sitting in the Ministry," he cries, with a sweep of his arms to the sky. "I'm the one that got away." And he leaps a tumbling stream with remarkable agility for a man going on 59. "I was not unhappy as a civil servant," he concedes, "but you have to sit on your emotions; it's like doing crossword puzzles: it's all right for a bit, but it's not like listening to Mozart."

Or spending all of a weekday afternoon on a seven-mile walk across the Isle of Man without meeting a soul. For Adams, above all else perhaps, is a countryman at heart. He was born and grew up on those very Berkshire Downs on which *Watership Down* is set. (In both that book and *The Plague Dogs,* the action takes place in real settings, some of which are shown in the photographs on the following pages.) From his earliest childhood his father, a country doctor, taught him to love the English countryside. So no one could have gained a greater sense of release when the staggering sales of his books enabled him to turn his back on London, where he had lived for 25 years

*Photographs by Peter Hirst-Smith*

The best-selling author stands by a waterfall on the Isle of Man, his tax-saving Irish Sea haven.

A real location from *Watership Down:* the railroad trestle where rabbits were to meet before escape.

This is Watership Down, where after many perilous adventures the rabbits from Sandleford agreed

while working his way up to be an assistant secretary in the Department of the Environment.

The only regret was that the demands of the English tax man made it more prudent for him to move, not to Berkshire (where he had long had a weekend cottage), but to the Isle of Man, a rural tax haven in the Irish Sea. "I don't like any town, compared with the country," he says. "In London I was conscious all the time that the earth was under concrete. I like to hear birds when I wake, and nothing gives me greater pleasure than to pass on to children the joy and happiness I have from being born in the country."

But do not for a moment imagine Richard Adams to be a sentimentalist. Indeed, he is a man of outspoken conservative views on such issues as race or law and order, and these views have occasionally brought him into sharp conflict with more liberal friends. He is, also, a fierce champion of animals against the excesses of Man. *The Plague Dogs,* his most recently published book, is an angry tilt at vivisection, and it has launched him into a crusade for greater concern toward animals. As a result of the book, he was invited not only to become a vice president of Britain's Royal Society for the Prevention of Cruelty to Animals (RSPCA), but was approached by Brian Davies of the International Fund for Animal Welfare to help stop the annual slaughter of baby harp seals in Newfoundland. He accepted both offers gladly, in the hope that his influence as a writer would add muscle to the cause.

"I believe we are in a crisis between the human and other species on this planet," he shouts into the wind as he marches over the fells. "The human race is omnipotent, so powerful that if we do not stop our depredations, what will be left in 50 years? No elephants, no kangaroos, no crocodiles, no ivory-billed woodpeckers. They will all have been destroyed by our rapacity. For me, nothing symbolizes this better than the slaughter in Canada every year of thousands of baby harp seals, battered to death in the presence of their mothers."

He has just returned from a three-week trip to Los Angeles, San Francisco, Vancouver, Toronto and New York to lobby actively to persuade the Canadian government to stop the killing and to secure the widening of the ban (already imposed in the United States) on the import of seal pelts.

"The seals," he goes on, "are top of my priority list. Next come whales and after that the banning of the leg-hold trap. To catch an animal in the steel teeth of a trap is unspeakably cruel; you might as well crucify it. Cruelty to animals has always preyed on my mind."

Around him on the Isle of Man the wildlife is sparse. "There never have been badgers, otters or foxes here," he explains, as we pause for breath at the top of a ridge to admire the view. "The only real predator is the polecat ferret, which was brought here in the 19th century to deal with rabbits and then went wild. It's as long as your forearm and very fierce—it's been known to go for a farmer. But we do have the Scottish hare and, of course, plenty of rabbits, including a strain of black ones."

:o dig their new burrow. It was a vantage point with a good, unobstructed view of the countryside.

In daring raid on Nuthanger Farm barn, Watership rabbits liberated three from hutch, took them to Down.

Adams' knowledge of rabbits comes not only from his own observations on the Berkshire Downs, but from naturalist Ronald Lockley's work, *The Private Life of the Rabbit.* Since Adams first chanced upon it, while doing homework for *Watership Down,* the two men have become good friends. Indeed, Adams has written the introduction to a new edition of Lockley's book, in which he admits that it taught him how little the rabbit's "true nature has been understood by the world in general. From Ron Lockley I learned that rabbits . . . had dignity and 'animality'—the quality corresponding to 'humanity' in men and women." And he came to realize, too, that "rabbits live under tension all the time. They have a life expectancy of about two years, and are in danger every time they put their noses out-of-doors." Not that they are cowards. "Rabbits fight like hell among themselves. They are also, whatever Hugh Hefner may suppose, monogamous. With such a short life expectancy in the wild they usually mate for life."

Adams' admiration for Ron Lockley, not just as a student of the rabbit but as a naturalist of all-round distinction, was acknowledged in an unusual way in *The Plague Dogs.* Lockley, along with ornithologist and conservationist Sir Peter Scott (SMITHSONIAN, May 1970), turns up in the nick of time to save Rowf and Snitter. Next winter Adams and Lockley are off to study seabirds in the rich Antarctic feeding grounds.

Adams has an acute eye. As we came down off the barren fells into a valley fringed with pines, he suddenly bent down. "A celandine," he cried in triumph, "the first one of spring. And look here, foxgloves coming up, and honeysuckle in leaf." Presently, by a cascade, he remembers, "We found a gray wagtail nest beside these falls last summer." On his long daily walks it delights him to spy more than anyone else. Although, as he wrote in a recently published guide to *Nature Through the Seasons,* "Nature is not a competition. It doesn't really matter, when you go out, if you don't identify anything. What matters is the feeling heart, and the only point of identifying things is to help you (if it does) to derive more joy and pleasure from them. One can take as much pleasure in the commonest as in the rarest thing."

He loves the narrow valley through which we are walking. "This is known as Glen Helen," he explains. "It belonged to a chap who long ago planted a million trees to honor his daughter Helen. I'd like to do the same—create Glen Juliet for my daughter."

This same Juliet is waiting for us with tea, hot buttered toast and cakes when we finally come in from the seven-mile tramp (which Adams cheerfully names "the journalist-killer" after several in the past who could not maintain his cracking pace over rough country). We are greeted, too, by an aging Irish setter named Will (after Shakespeare), too old to go on long

*The author, a London-based free-lance writer and lecturer, wrote about four generations of sea-tragedy photographers in the October 1978* SMITHSONIAN.

## *The man who wrote* Watership Down

At Dhoon Glen on Isle of Man, Adams and his dog Will (for Shakespeare) pause to shake hands.

hikes (he has since died), and a cat named Chairman Miaou. Juliet is standing in for her mother, Elizabeth, an expert on English ceramics who is away on what the family calls "one of her pot courses."

Aside from Richard Adams himself, if anyone deserves credit for *Watership Down* it must be Juliet, now 21 and recently graduated from Oxford, and her sister Rosamund. They insisted that the story their father had made up on the way to Stratford, and expanded on subsequent journeys, be written down. For a long while Adams resisted, partly because he was busy seeing through a new Clean Air Act at the Ministry, and also because he feels "it's nice for each family to have some stories of its own."

"But Juliet," her father said as she poured out tea, "was very persistent. Once at bedtime I was reading the girls a book which was so badly written that I threw it across the room and said 'I could write better than that.' The next day I bought some foolscap paper and began. I read it to the children in the evenings, and they made suggestions. Juliet felt we needed a comic character, and so Bluebell was introduced. And they made it a firm principle that none of 'our' rabbits was to be killed, so Bigwig did not die in his fight with General Woundwort, as I had originally planned."

While his rabbits took on the mantle of real people, with their own special language (*silflay* for coming up to feed, *ni-Frith* for noon, and *hrududu* to describe any motor vehicle), Adams always played his anthropomorphic game by what he calls Rudyard Kipling's rules. "You can attribute motives and intelligence beyond those of the animal," he explains, "but never make them do something that would be physically impossible for the real creature." He does bend his own rule slightly when Bigwig is caught in a snare and the other rabbits manage to get him out, for he had promised his daughters not to sacrifice one of "ours."

Although *Watership Down* was created in Adams' imagination, it is in a sense a book by a family for all families. Certainly it is the product of a strong and happy family, in which Adams takes great pride. He is very much the traditionalist—"I am for Queen and country," he often says. The family is an essential part of that philosophy.

"Christian society in the West is based upon the family as the basic unit—the molecule," he stresses. "And it is the breakdown of Christian marriage today that is leading to untold evil. I'm agin divorce; it has done untold harm in the Western world—it's a return to barbarism." Marriage, he argues, should be between two people for life (his own has lasted 30 years). "Marriage is like war," he states. "In war you must believe 'we'll win come hell or high water or the world we love will never be the same again'; we must have the same faith and determination to make marriage work, come what may."

His second book, *Shardik,* was founded upon his belief that everyone from a broken home is enslaved. It is dedicated "To my onetime Ward in Chancery Alice Pinto." "Alice," says Adams sadly, "was the victim of irresponsible parents and it drove her almost to breakdown. We took her in and did what we could for her." He reaches out for a copy of *Shardik* and turns to the dedication. Beneath it, in Greek, are lines from the *Odyssey,* which he translates "This was the most pitiful thing my eyes beheld in all my wanderings on the cruel sea."

His own strong faith in how children should be conceived and nurtured was expressed by the governor of

Entrance to abandoned mine in Lake District where the Plague Dogs and the fox found shelter.

Phyllis Dawson's shop at Duddon Bridge was a way station on flight of runaways Rowf and Snitter.

Zeran near the end of *Shardik*. "Children," said the governor, "they're born of mutual pleasure and joy—or they ought to be. And God means them to grow up—well, watertight, like a sound canoe; fit to work and play, buy and sell, laugh and cry. Slavery—real slavery's being robbed of any chance of becoming complete. The unwanted, the deprived and deserted—they're slaves all right, even if they don't know it themselves."

Although publishers have presented *Shardik* as a book for adults, whereas in Britain, at least, *Watership Down* made its real breakthrough as a children's book, Adams hates to see his work assigned to any particular category or age group. "The concept of a children's book is a mistake," he says. "I read *Oliver Twist* when I was only nine, and my own children went to Shakespeare and opera very young. But you must take time and share it with them. You don't say 'this is difficult grown-up stuff.' If they are familiar with the text or music before they go, when the curtain rises they feel 'I know this.' " Even so, such great occasions may have their unexpected moments. When their younger daughter, Rosamund, was five the Adamses took her to Mozart's *Don Giovanni*. "When the ghost of the *commendatore* came in," laughs Adams, "Leperello was under the table and Rosamund was under her seat."

Suddenly he leaps to his feet as if he, too, has been startled by some phantom, and rushes to the high bay windows that look out over fields to the Irish Sea a mile away. He grabs a pair of field glasses (strategically placed by every window in the house). "Aha, a cock pheasant on my land!" he says. "And look, there's a greenfinch. Even saw a snow bunting out here yesterday." He turns the binoculars on a flock of rooks, soaring gracefully on the evening wind. "They're going in to roost in the wood over there," he observes. "It's called 'Lherby Dhoo,' which means 'the black hillside,' because it is often covered with rooks."

The light is drawing in now, and Adams makes his way to his library, to kindle a fire. It is a vast annex to the house, almost like a chapel at one end, with a high timbered ceiling. Here in a great bay window that looks toward the distant sea, he writes his books slowly and painstakingly in longhand. He labors over every word, for language is one of his great delights. His own conversation is sprinkled with the words of Dr. Johnson, Milton, Shakespeare, Wordsworth and Proust. Yet he laments that he is not well-read. "One reason is that I read very slowly," he says. "You don't experience a book emotionally if you read fast. I like to be moved to tears and laughter, to examine the sentences and the words. So it's shocking what I haven't read for someone who would like to be a real scholar of the novel—no Fielding, no Smollett."

But he has always been a great reader. "I used to attract mild derision from some of my civil service colleagues," he remembers, "because I read Tolstoy or Turgenev on the tube to work, and spent my lunchtime reading. A career civil servant will spend lunch talking shop and getting to know the right people; I lunched alone and read." Now he feels immense satisfaction that he can, if he wishes, just sit and read all day. "I'm going right through Spenser's *Faerie Queene,*" he remarks, "and I'm just getting stuck into the metaphysical poetry of Andrew Marvell."

Adams delights in diverting some of his new-found wealth into collecting first editions of great novels. He fingers proudly through Dickens' *David Copperfield* and *Barnaby Rudge,* George Eliot's *The Mill on the Floss,* Trollope's *The Last Chronicle of Barset,* and a host of children's classics—*Treasure Island, King Solomon's Mines, Alice in Wonderland, Water Babies* and *The Wind in the Willows*—that fill his shelves.

At his library desk he works at new book projects like a craftsman. "I agree with Trollope, who said he wrote books like a shoemaker makes shoes," he says. "After all, a well-written piece is like a pretty girl—she starts with a bias in her favor." He is rarely satisfied that his novels are complete. "A novel," he goes on, "is never finished. It's like helping your mother to make jam in the kitchen when you are a child; you keep on stirring a little, but how do you judge the precise moment when it has the correct consistency?"

On his desk is the fourth draft of his latest novel, scheduled for publication next spring. He is a trifle reluctant to talk about it, believing it can bring bad luck to say too much in advance. But he will allow that it is called *The Girl in a Swing.* Moreover, there is not an animal in sight. For what Richard Adams has turned to is, of all things, an erotic novel. "The sex novel," he says, "has gone all wrong. It has to be a much more finely tuned instrument to describe how delicate and beautiful physical sex is."

In Adams' new book, tailored to his own firm convictions that we need to restore the value of marriage, the partners will be married. Just as *Shardik* was his protest at the misery caused by broken marriage, so this new one will be aimed at the permissive society.

Somehow it is hard to visualize Richard Adams trekking through the pornographic wasteland in Copenhagen (which he did as part of his research). He sits now before a roaring log fire, dressed in brown tweed jacket and beige slacks, with Will at his feet. The wind is roaring around the chimney, and Mozart's third Violin Concerto played by David Oistrakh is coming from the stereo. Adams is totally absorbed in the music, saying nothing. Occasionally his arms come flying up over the top of his wing chair as he conducts some passages. After Mozart comes the Fourth Symphony of Honegger, the Swiss-born composer.

For nearly two hours scarcely a word is spoken. Finally at midnight Adams makes tea, opens a tin of biscuits, and reverts to the original theme of our walk —the crisis of wildlife. "My real aim, my dream," he says, "would be the creation of a World Wildlife Council, on which all major nations would be represented, and which would have a permanent staff. It would have real, active clout. It would be able to say to the Canadians, 'Stop the slaughter of harp seals now,' or to the Japanese, 'You cease killing whales as from Monday morning.'"

Richard Adams, former civil servant, knows that such a dream can hardly be fulfilled. "But the success of my books has made me realize I pack persuasive power," he explains. "I am determined to exercise it to see the animals on this planet included in, not out."

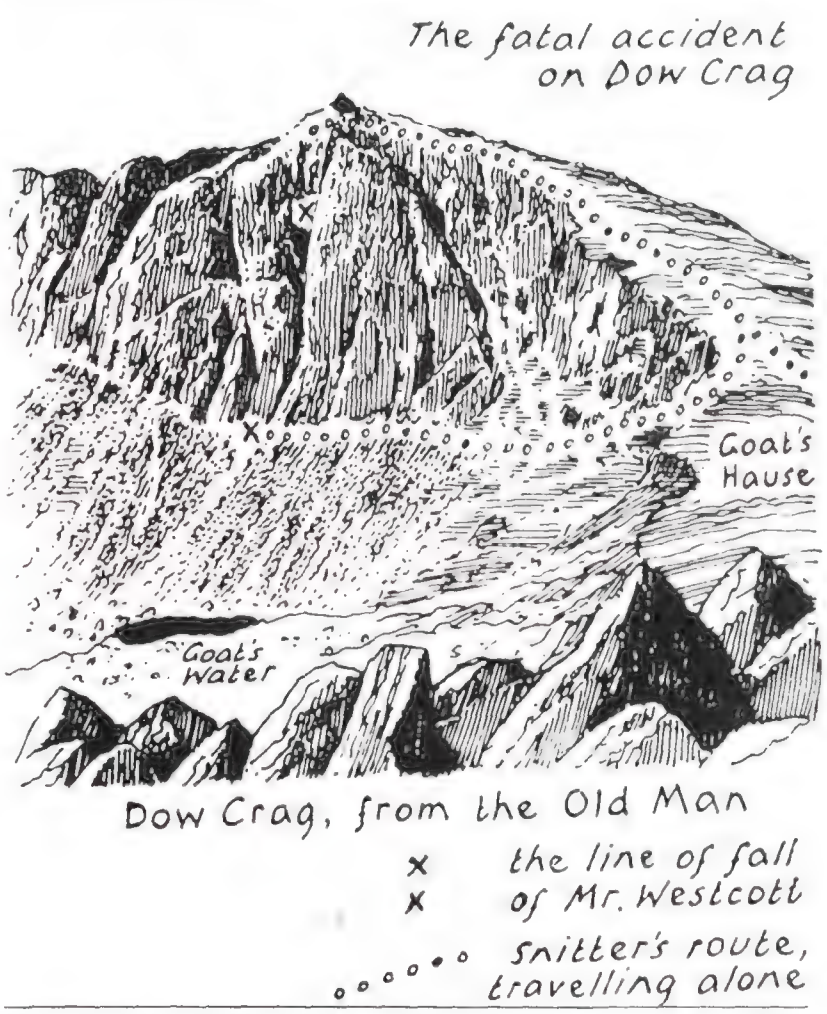

The fatal accident on Dow Crag
Goat's Hause
Goat's Water
Dow Crag, from the Old Man
the line of fall of Mr. Westcott
snitter's route, travelling alone

Diagram from *The Plague Dogs,* above, shows site on Dow Crag where fictional revenge seeker Geoffrey Westcott, when stalking the dogs, fell to his death. At right, Richard Adams hikes up the real Dow Crag.

The blur of wings and feathers is stopped as a great horned owl comes in for a landing in the lab.

# *'Papa Flash' stops blurs and bullets*

*In a long, full career, Harold E. Edgerton revolutionized high-speed photography and transformed the way we see the world*

We have become familiar with unseen worlds: the tiny worlds of the microscopist, the distant worlds of the astronomer, even the imaginary worlds of the speculative exobiologist. The high-speed pictures on these pages are of our own world, but they show things we never see because they happen too fast.

Most are from a book, *Moments of Vision,* published this month by MIT Press to celebrate the work of Harold E. "Doc" Edgerton, the man who revolutionized stroboscopic and electronic flash photography. All the high-speed pictures are his or were taken with his equipment. Much of the text was written by James R. Killian jr., former president of MIT, science adviser to President Eisenhower, and Edgerton's old friend.

Killian says that Edgerton's strobes enabled us to manipulate time just as microscopes and telescopes manipulate space. The arrangements of the feathers as an owl lands with its "flaps" down or the flight of a bullet as it emerges from an apple became visible to us when Edgerton stopped the action with exposures of a millionth of a second or better. (If you let a second be the 3,000-mile distance across the country, then a millionth of a second is about 16 feet, more like the distance across your living room.) Edgerton's achievement was not only to produce a flash quick enough to stop a bullet, but also to be able to time the flash so he caught the bullet in the picture. Flash was the only way. Even if a mechanical shutter capable of such short exposures could be constructed, the problem of obtaining sufficient light to expose the film in so

Harold E. Edgerton examines the insides of a new underwater camera after testing it this spring.

A bullet is caught emerging from an apple in an exposure only one-third of a millionth of a second long.

Wings of a Peruvian hummingbird are "frozen" as it flies backward from twig on which it was perched.

short a time would remain. High-speed flash also made possible motion-picture cameras that operate at 6,000 frames per second instead of the conventional 16 to 24. The film moves continuously, rather than intermittently, at more than 125 feet per second. The lens remains open, but the flashes are so "instantaneous" that there is no blurring effect from the racing film.

He became famous when another MIT graduate, Gjon Mili, put the strobe lights to work in the studio. When *Life* published Mili's study of tennis player Bobby Riggs in 1938, the reputations of both photographers were made.

Edgerton showed us the world of bullets flying, milk drops splashing and water running. He captured the motion of hummingbirds and acrobats, tumbler pigeons and dancers. During World War II he and his strobe lights gave a new dimension to nighttime aerial reconnaissance (he enlisted reluctant fighter pilots for photographic missions by having them practice on a nudist camp in England).

Institute Professor at MIT until he "retired" ten years ago (he continues to teach in both classroom and laboratory), Edgerton is still hard at work, concentrating now on improved cameras and sonar systems for underwater work. Ten voyages with Jacques Yves Cousteau aboard the *Calypso* earned him the sobriquet "Papa Flash." He was called in to help find the *Monitor* and the *Britannic,* not to mention the Loch Ness monster (SMITHSONIAN, June 1976).

Edgerton designed his equipment and nearly always took his pictures in a very conscious effort to extract new information from a situation. To offer examples at random, he discovered how some bats steer through the air and that a pistol does not "kick" until the bullet is several feet out of the barrel, so aim is not affected. But his pictures do more than record information.

Killian argues that Edgerton's photographs frequently transcend the mere "powers of the machine" so disparaged by Susan Sontag in her book *On Photography.* He quotes critic Geoffrey Holt, from the introduction to a 1976 exhibition in Great Britain. Calling Edgerton "one of the masters of the optically conscious," Holt says: "His photographs are remarkable because even at a millionth of a second, his work has its own identity, as recognizable as those which distinguished more conventional photographers. Such is the power of these photographs, they have, within his lifetime, become classic visual images."

Now 76, Edgerton has a lot to look back on. The electronics company he founded with two former students, Kenneth Germeshausen and Herbert E. Grier, now trades on the New York Stock Exchange as EG&G. *Quicker Than a Wink,* a short film made with his equipment and assembled by Pete Smith at MGM, won an Oscar. In 1973 Edgerton received the National Medal of Science.

And he has more. Killian calls the book a festschrift, a collection of learned papers compiled in tribute to the man. But it really is a subtle portrait of a man with an extraordinary talent for making friends. When Killian stops the action on Edgerton, it is not in the laboratory or at sea, but in a living room when Edgerton is playing the guitar and singing with his students.

—JOHN P. WILEY JR.

Edgerton's special lighting techniques reveal pattern of air currents created by flame (bottom) and fan (top).

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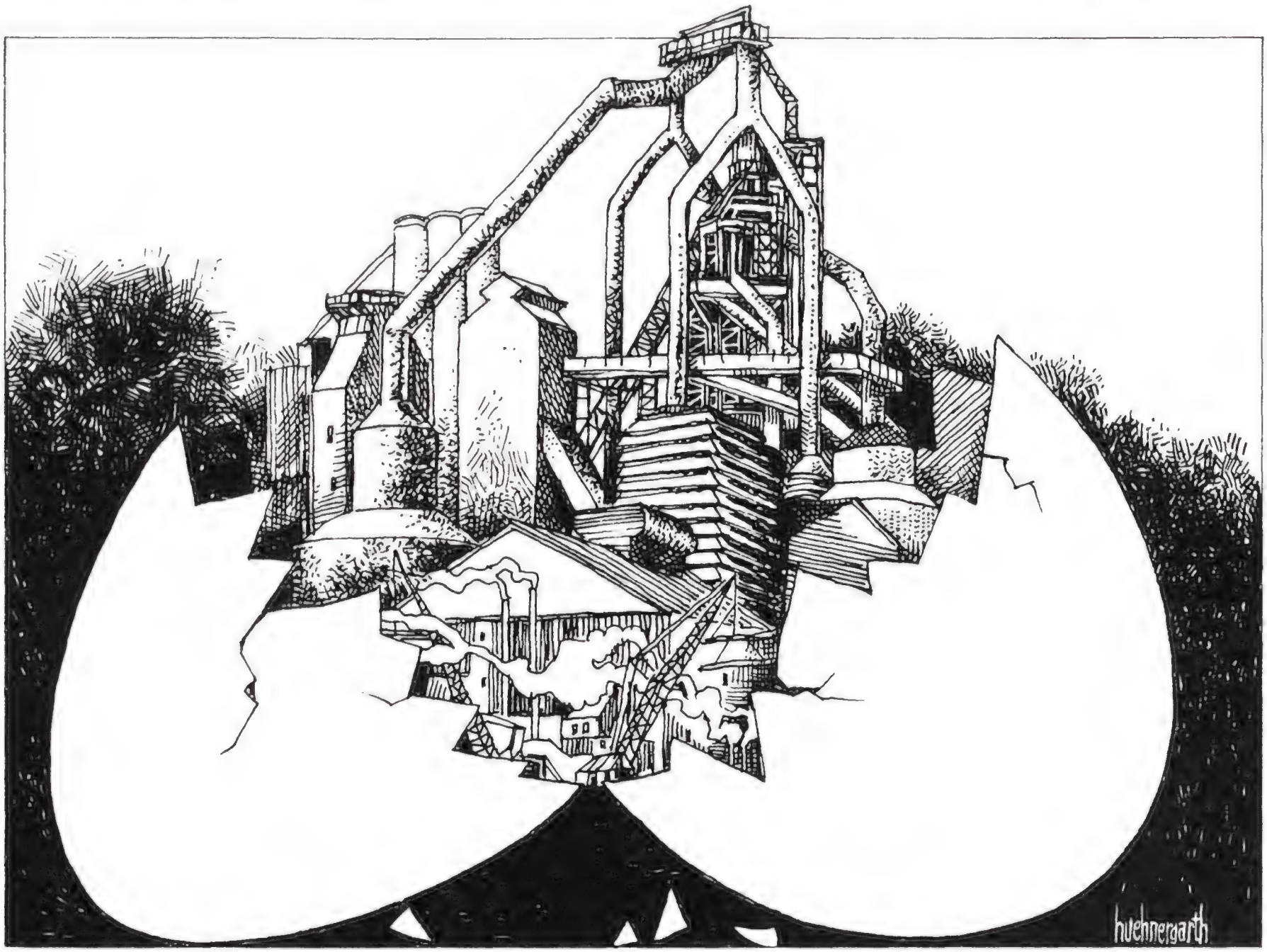


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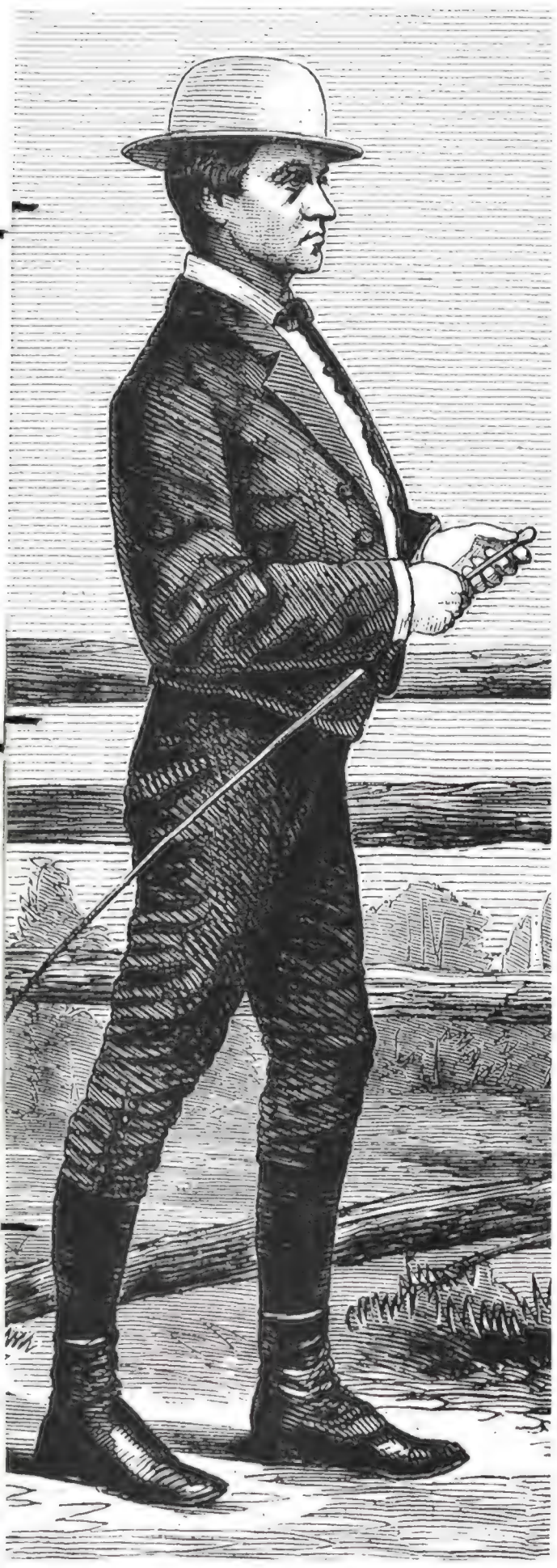
*By Edward Lamb*

# 'Weston the walker' made pedestrianism a way of life

*He led the world at pacing off miles in record time and urged others to learn the joy of stretching their legs*



Weston as he looked at 28, during his 1867 Portland (Maine)-to-Chicago walk. He was always nattily dressed . . .

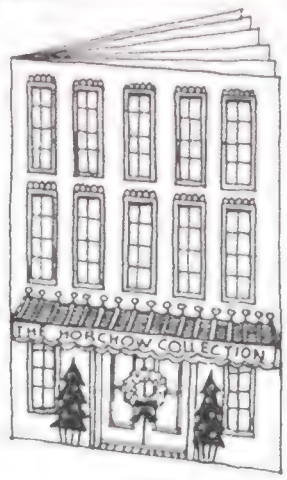
In 1926, three years before his death at age 90, Edward Payson Weston wrote that walking was "like a perfect massage. It will ease and relax the muscles. But unlike massage it will also strengthen them."

Today, when it seems that everyone in the United States is either walking, jogging or running—or writing a book about those activities—Weston's words are particularly timely. For in the latter part of the 19th century, when walking competitions aroused wide interest and inspired high stakes, "Payse" Weston just about owned the sport. But it went deeper with him than just the setting of many records during his long career. "It was my purpose," he once wrote, "to prove that walking . . . kept a man always in condition without overtraining; that if he took care of himself, ate sensibly and avoided strains, he would actually improve with age and never go stale."

Over the years, Payse Weston did just that. Born of poor parents, labeled "thin and undersized," devoid of serious schooling, he became a reporter on the *New York Herald*. In 1861, on a bet, the 22-year-old Weston undertook to walk from Boston to Washington within ten days, arriving in time for Lincoln's inauguration. He missed his deadline by half a day, but his effort caught the public fancy.

Six years later, Weston accepted a challenge from a walking club in Maine to walk from Portland to Chicago—a distance of 1,326 miles—within 30 consecutive days (but never on Sunday) for a purse of $10,000. Recently married to a young Sunday school teacher, Maria Marsh, he was lured by the prize money. Moreover, Weston could never resist an opportunity to prove his creed: that the capacity of Man was unlimited. He wanted to become the "propagandist for pedestrianism," he told one reporter, to impress on others the joys and beneficial

. . . except in his foul-weather gear, complete with lighted lantern. His most notable records were set in later life.

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On his Portland-to-Chicago walk, Weston, here in full swing, was trailed by six men in a carriage to see that there was no hanky-panky along the way.

effects of the rugged life of exercise in the fresh air.

Attracting wide attention from bettors and the press alike, Weston trekked across the countryside, night and day, and into the hearts of Americans. As the world slept, his relaxed and rhythmic stride carried him mile upon mile. Against fantastic odds, the "Yankee Clipper" beat the deadline by an hour and 20 minutes. Overnight he became a sensational hiking phenomenon. Back in New York he was deluged with invitations to take part in country fairs, weekend walks and to give lectures, and he put on walking exhibitions up and down the Eastern Seaboard.

Sportswriter Henry Chadwick noted in *Beadle's Dime Handbook of Pedestrianism* that "up to the period of the great walking match against time, which was successfully undertaken by [this] noted American pedestrian . . . the art of walking as a healthful exercise had never been considered one of the popular exercises of Americans. It is a well-known fact that where twenty Englishmen can be found who can walk forty miles between sunrise and sunset without any extraordinary fatigue, there are not five Americans who can do a third of the distance without great effort and consequent weakness."

*Lamb, a 77-year-old Toledo industrialist and outdoorsman, met Weston as a boy and now emulates him (as many others do today) with 20-30 mile weekly hikes.*

Chadwick pointed out that Weston's triumph had sparked public attention to what a "perservering, determined Yankee can do in the way of walking. . . . The habit of walking has just been too rare."

What was his technique? "Get a pair of comfortable shoes," he advised. "Have the heels as low as possible with comfort, remember that shoes without heels would paralyze one who had never been accustomed to them after a few miles. Then let your feet find their natural position, whether they toe in or out. Let the stride be easy and don't try to lengthen it. . . . A mile a day is not enough to get up a brisk circulation. . . . The frame of mind of the average man walking under orders doesn't get time to change in that distance. . . . If [he] can be induced not only to shuffle along—to go slowly and easily—but to keep on going for enough distance, and to keep repeating the stunt day after day, he will find himself enjoying his walks. Instead of trying to rush through to the finish he will want to prolong them, and right there, when his mind is at ease, the walking will begin to benefit his body. . . ."

He walked at a smooth gait, a sort of shuffle, bending the knees only slightly. He moved at about five miles an hour for astonishingly long periods. Most hikers can cover about three to four miles an hour at a reasonably brisk pace; short walking records have been set at eight miles an hour. But Weston's great accom-

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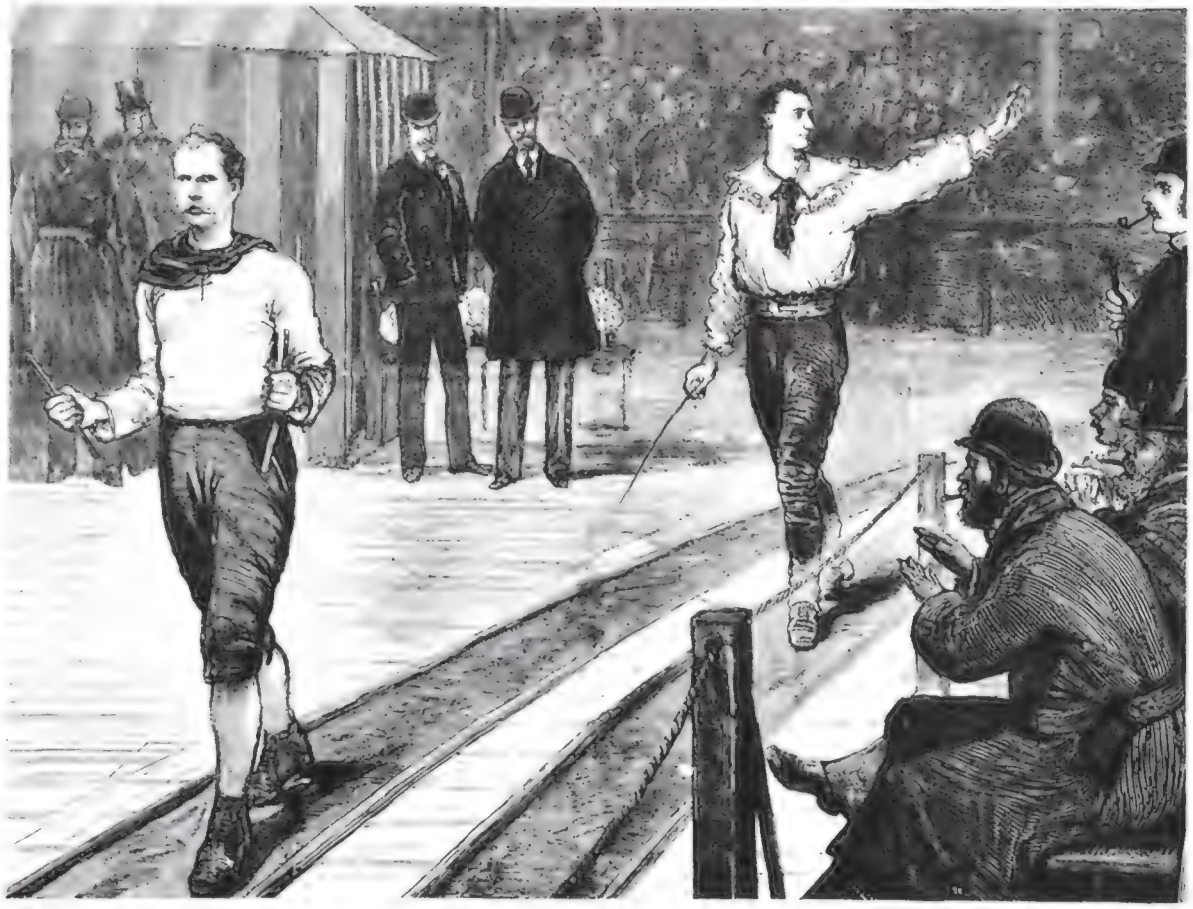

"Payse" Weston, with raised arm, lost this "Great Six Days' Walking Match" in London's Agricultural Hall. Usually, European engagements were triumphant.

plishment was his ability to sustain his pace for days and weeks.

Always a dandy, on long-distance walks he wore a jacket, tight-fitting black britches, stout brogans with red tops, a round-top light silk hat and buff gloves.

Weston's fame continued to grow, and in 1871 New York City witnessed one of his most dazzling displays. At a "stupendous" exhibition organized by four sportsmen, Weston, playing to a packed house at the Empire Rink, walked 400 miles in four days, 23 hours, and 32 minutes—approximately 80 miles a day. For this he was paid $1,850 of the gate money, plus $300 in bonuses for breaking lap records.

Inevitably Europe wanted to see this walking phenomenon, and Weston and his family—he and Maria now had several children—arrived in London in 1876. In the first five weeks in England he hiked a total of 1,015 miles. More than 200,000 excited Englishmen paid to see him.

They soon learned that Weston welcomed invitations to speak. Between lectures he toured with his family and participated in a hiking contest in Edinburgh. In a six-day exhibition race his walk of 450 miles won first prize against many of the world's finest hikers. The British were astounded. They couldn't believe that an *American* could do it.

At age 40 he won London's Astley Belt, and also a side bet of $2,500 with its donor, Sir John Astley. Weston walked 550 miles in 142 hours, dapper as ever.

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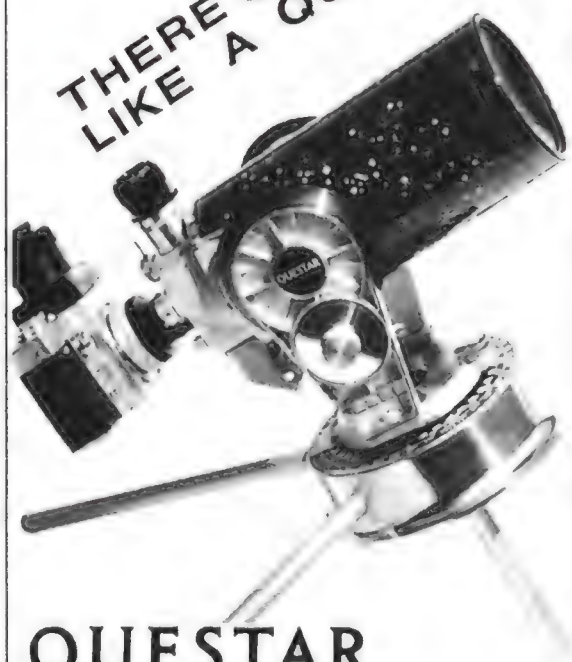

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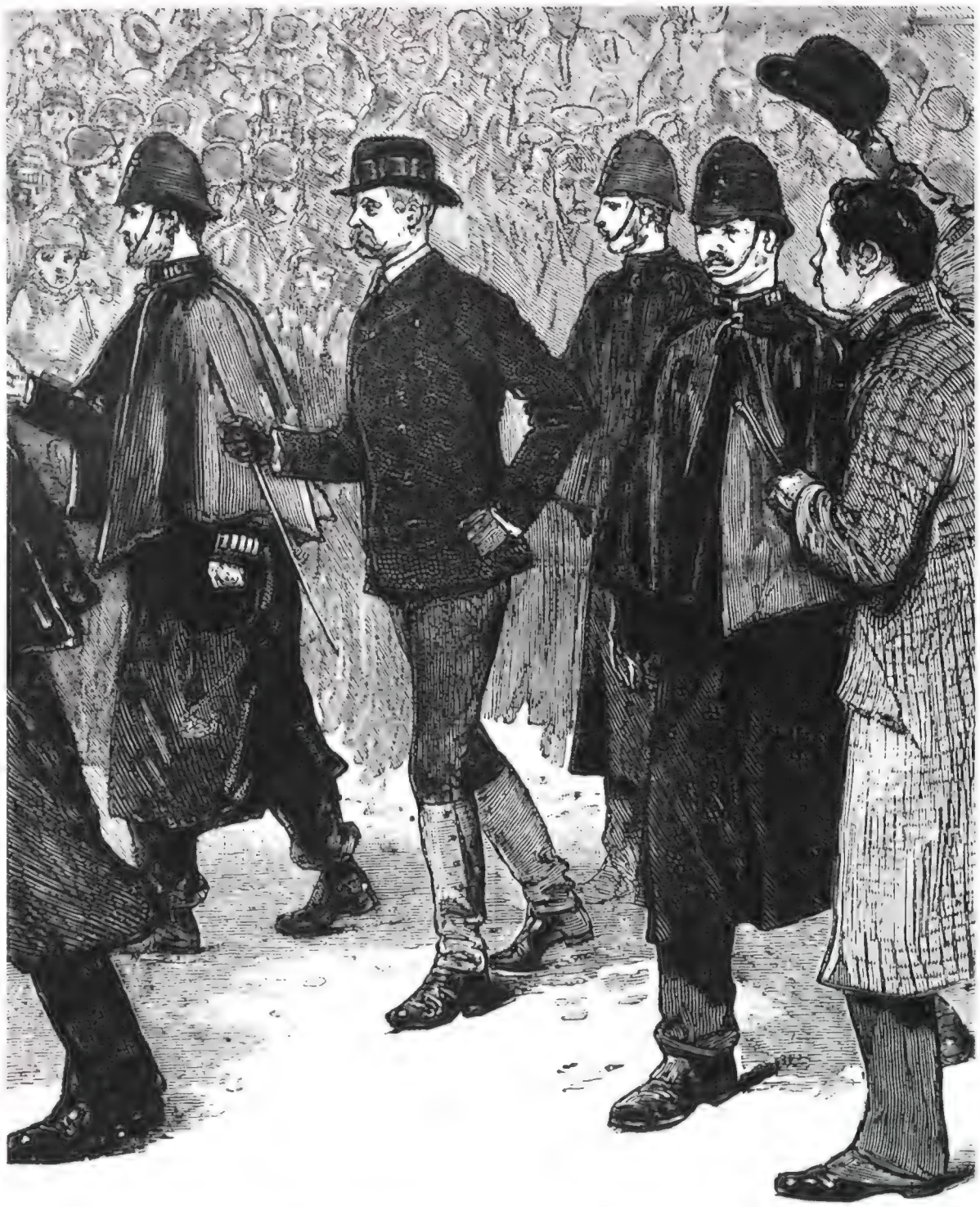

With rhythmic, shuffling gait, Weston arrives at Victoria Coffee Hall, London, on Temperance Walk—5,000 miles in 100 days. He spoke at each day's end.

Years later an admirer told how Weston "accentuated each third step, visibly accelerating his speed by so doing. This method brought the extra effort alternately on the left and right foot, with respite between. . . . He also carried a little whip with which he occasionally switched his sturdy little legs."

Several European sportsmen conceded that the "nervy little beggar of a Yankee" was the finest hiker in the world, but there were Irish, French, German and British walkers ready to dispute this. The controversy was resolved by a group of prominent British sportsmen, including Lord Charles Beresford, Sir John Astley and Sir Edward Levy-Lawson. They invited Weston to join in a six-day test for a purse of $2,500. The Astley Belt, undisputed symbol of pedestrian perfection, would be on the line.

In an 1879 dispatch from London, the *New York Times* reported: "Weston has just completed 550 miles in 142 hours [and] won the Astley long-distance champion belt. Although it has been hard for Englishmen to see this famous belt slipping away from them, they have, during the closing hours of this wonderful match, cheered the American to the echo, and Agricultural Hall has been the scene of the wildest enthusiasm. The pedestrian and his wonderful achievement are the all-absorbing topics of conversation, and

he is the hero of the hour. . . . As his score crept past the greatest ever made the building fairly shook with the tremendous applause of the multitude who watched the sturdy walker, and the changing figures on the blackboard. A large number of Americans were present and their shouts of encouragement and the many bouquets and baskets of beautiful flowers showered upon their plucky countryman seemed to imbue him with new life; and with a smiling face he reeled off the laps as though he were walking for the fun of the thing."

"Blower" Brown, the favorite to win, finished nearly 100 miles behind Weston! Sportsmen everywhere were stunned.

A month later Weston, reluctantly, at the urging of his wife Maria, decided to return home. His reputation in America was strengthened by every news story from abroad. No breath of scandal had ever marred Weston's image: no fixed races, no feigned collapses, no phony injuries. He neither smoked nor drank. He simply piled record upon record.

Weston arranged a "farewell appearance" in England, and made the greatest speed walk of his career. He covered 127 miles in 24 hours for a speed walking record of 5.29 miles an hour.

*Walking for temperance*

Back in the States Weston became every inch the relaxed, successful, professional pedestrian. The British, however, wanted him back. Of the dozens of invitations from groups seeking to sponsor his appearances, the most attractive came from the Church of England Temperance Society, which offered to pay all his expenses —he could keep any prize money he won. In exchange he was to lecture and hike.

Payse promised that from November 1883 through March 1884, he would walk 50 miles a day for 100 days. At the end of each day's grind he would deliver a temperance lecture. A strange alliance: professional sportsman and Church of England, but Weston enjoyed the English hospitality so much he remained in the country for another two years.

Over the years Payse, as he once put it, had been "pounded, x-rayed, weighed, pinched and cross-examined" by committees of medical men. In May 1906, 30 prominent New York doctors again conducted exhaustive tests on the 67-year-old. An hour or so before the examination


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On 1910 walk from West to East Coast Indiana newsmen shadowed Payse in car.

Weston completed a walk from the City Hall in Philadelphia to the Fifth Avenue Hotel in New York. He covered the 100-mile distance in 23 hours and 54 minutes. The doctors discovered that he still had "the same elasticity of muscles, the same even breathing, the alertness of the eyes" that their predecessors had found in the man they studied many years before.

Weston decided to prove a point. At the age of 68 he repeated his hike from Portland, Maine, to Chicago. The route taken was approximately 19 miles longer, but—40 years later—he shaved 29 hours off his 1867 record.

The year 1907 marked a major change in his personal life. Payse and Maria had separated in 1900 after years together. His many absences had made a harmonious family life difficult and they had slowly drifted apart. They were never divorced, but their two daughters lived with Maria in Brooklyn, supported by Weston. Now Payse met Anna O'Hagan, with whom he was to live happily for the next 22 years.

As Payse approached his 70th birthday

Weston didn't like cars. Ironically, a New York taxi ended his walking career.

he determined to hike from San Francisco to Los Angeles. He had studied the coastline and announced that he would walk the 512 miles within 12 days, thereby setting a new record. The *San Francisco Examiner* offered to sponsor the project, and immediately announced "the most extraordinary event in the long history of hiking." Calling Weston "the greatest hiker in the history of mankind," the paper continued: "There is something very special about this tramp along the coastline and over rugged mountains. He will travel in temperatures which move from 60 degrees to more than 120 degrees. It will be a rough and dangerous road and he will make the walk in less time than anyone has ever dreamed of doing it before." As usual the betting was heavy and local interest ran high. Weston Walking Clubs, already popular, doubled and tripled their memberships.

On May 25, 1908, the diminutive figure of Payse Weston set out from the center of San Francisco. Huge crowds gathered at points along the way, but Payse had no time to stop. Instead he invited his


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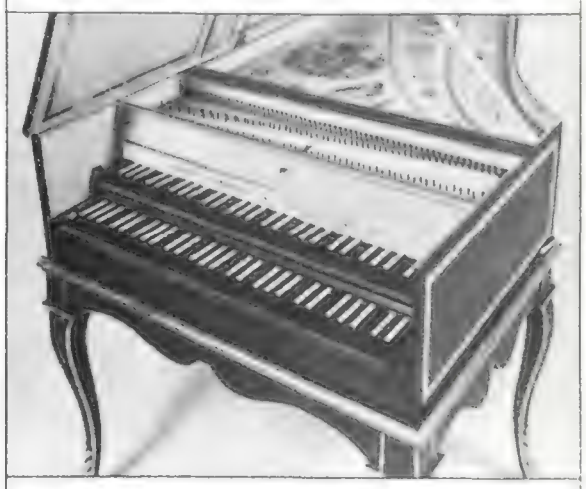

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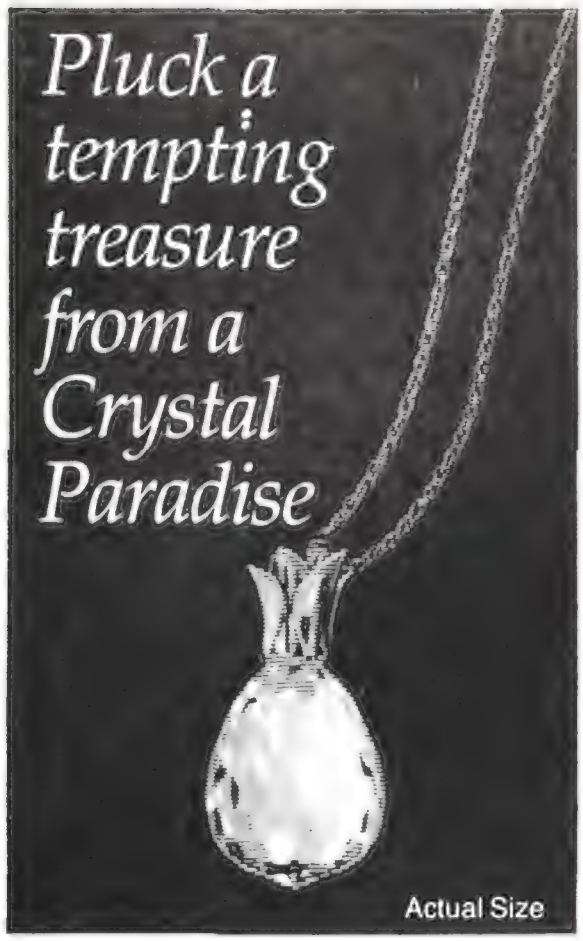


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well-wishers to "share any part of the hike into Los Angeles." Sweltering along in noon heat, or rambling in the wrong direction in the mountains at night, Weston, according to one observer, was "simply flying." And indeed he was. What he promised to do in 12 days, he completed in fewer than ten.

Following more hikes and lectures, Weston was lured off on another major venture. In 1909 he left New York for San Francisco.

Between March and July he battled along, encountering extremes of heat in the desert and snowstorms and avalanches in the mountains. He spent four miles on hands and knees following a railroad track in the Rockies, "too frail to stand against the raging winds." He was later to say that it was the worst, most frightening hiking experience of his life. But he made it within 105 days. No wonder that he found California "paradise, God's own country."

At the age of 74, Weston was invited to dedicate and lay the cornerstone of a new building for the Minneapolis Athletic Club. Seeking no records, Weston decided to walk the 1,500 miles from New York City to Minneapolis in 60 days. "I am proving the point that a man my age can enjoy delightful long-distance hikes," and prove it he did. More than 300,000 Minnesota residents greeted him.

Weston's waning years were dogged by bad luck and financial difficulties. Following a stint as a hospital male nurse, he landed a job as a handyman at New York's Hotel Albemarle. He had a stroke, and, at 85, intruders broke into his house and shot him in the leg during a scuffle (Weston nevertheless beat them off). Three years later, while on his way to church, a racing taxi struck him and dragged him 30 feet along the curb. His injuries confined the once surefooted pedestrian to a wheelchair.

Playwright Anne Nichols, introduced to Weston by Anna O'Hagan, came to his rescue. Wealthy from her long-playing Broadway play, *Abie's Irish Rose,* Miss Nichols established a trust fund for Weston for life.

Payse lived another two years. On May 12, 1929, he died quietly in this sleep. He had wanted to live to 90. He made it.

The *Saturday Evening Post* once quoted him giving advice that echoes well today: ". . . Most of the men I have met between the ages of forty and seventy could make themselves feel years younger by taking to the open road and—barring hearts that are too far gone to be salvaged—could be assured of longer and happier lives. More than that, all of them would be astonished at the vigor that comes of long, regular, easy-gaited walking, and the positive eagerness it will develop for more distance . . . as for the younger men, sometimes in watching the mad pace of modern life I wonder if they are not more in need of hikes than their grandfathers. Walking would teach them the quality that youngsters find so hard to learn—patience. It would give them proof that the race is not to the swift."

At 85, still formidable, still a dandy, Weston was in full stride. It was at this age that he beat off would-be intruders who attacked and shot him in a leg.

# "Harry caught me and that hammer-headed horse of mine just right."

JOHN WAYNE, *THE MARSHAL*

In 1969, *Time* magazine commissioned Harry Jackson, the Master artist of The American West, to do a cover portrait of John Wayne as Rooster Cogburn in *True Grit*.

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*Harry Jackson's art has been collected by such names as Richard K. Mellon, H. Roland Harriman, Jacques Lipchitz, and the Queen of England.

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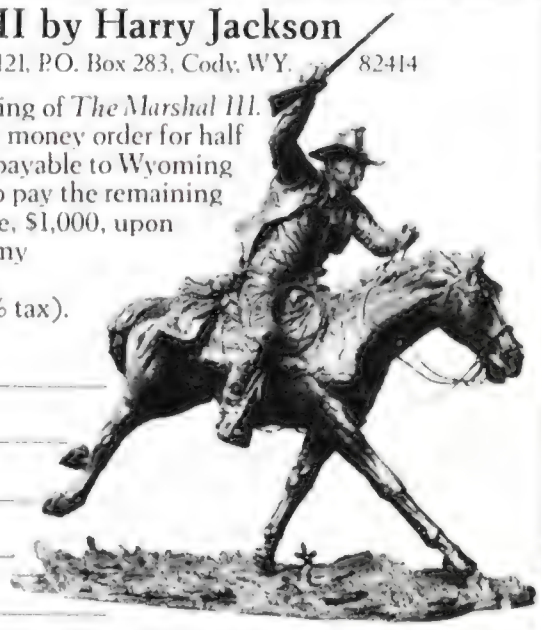

# *Book reviews*

*If Mountains Die: A New Mexico Memoir*
John Nichols
Photographs by William Davis
(Alfred A. Knopf, $20; paperback, $10.95)

Although John Nichols' latest book, *If Mountains Die,* describes an austere and timeless New Mexico landscape, his images evoke oceans and the rhythm of breaking waves. At first a curious metaphor, this comparison ultimately succeeds; Nichols understands well the similarities between the brooding, violent sea and the mysterious, consuming hills of New Mexico, and he draws on the beauty of each in telling the story of his life there these last ten years.

Nichols' history traces the metamorphosis of a precocious novelist (he published *The Sterile Cuckoo* at 24) into an angry young man full of left-wing disgust for the materialistic society that reared him. Descended from Massachusetts seafarers on his father's side and Breton poets on his mother's, the young Nichols appeared to be a fine candidate for a career among New England literati. Then came Vietnam. Devastated by his own impotent rage against the war, Nichols subsequently fled New York for the seeming imperturbability of Taos, New Mexico, where he hoped to purge his premature cynicism by pursuing a Thoreauvian existence in an adobe dwelling with a leaking roof.

This exodus to the land of enchantment was a homecoming of sorts, we discover. Nichols' mother had a strong affinity for New Mexico and journeyed there once herself. As a boy, Nichols spent an arduous summer on a crew of fire fighters in the Chiricahua Mountains. Quite naturally, then, he assumes a nostalgic voice in relating the beauty of his new terrain: "Before I even knew the name of this place I could have proven to you that it had always existed in my heart, and in the hearts of my family. . . . That star, my star, has always been suspended exactly above this spot on earth."

His is a style that renders a plain a moor, a canyon a lush valley, a star-filled sky a mystery and wonder commensurate with Alaska's northern lights. Nichols' poetic inspiration is Taos Mountain, "always a historical, emotional, visual starting point. . . . They say it draws back folks who have strayed. . . . Because of its significant shape, and because of its position in the valley, the mountain is the symbol for all that has ever happened or ever will happen here." William Davis' color photographs of Taos Valley nicely embellish the author's fertile prose.

Nichols' reminiscences are not all sunsets and sagebrush, however. Halfway through his account, he changes tone. Something about the ethereal beauty of New Mexico's landscape renews his urge to see political justice, and the ensuing chapters echo the ponderous theme of his earlier work, *The Milagro Beanfield War,* where one man frustrates the blight of progress in the Southwest by illegally watering his bean crop. Regrettably, Nichols once again overemphasizes this simplistic point, romanticizing the local personalities and taking on a crusade to keep Taos beautiful in the process. His outlook reflects a naive notion of the West as a sort of psychiatric playground which must somehow be spared the irrevocability of modernization.

Granted, Taoseños need a spokesman—even a transplanted one. However, Nichols needs to learn the virtue of understatement or his work is apt to be interpreted as mere tirade. The book's strengths come at those subtle moments when Nichols melds the two most basic influences—earth and water—in recounting one man's struggles and defeats and triumphs in this strange and severe, beautiful land.
—*John Sullivan*
Writer and editor, *Denver Magazine*

*American Jewish Landmarks: A Travel Guide and History,*
*Volume II—The South and Southwest*
Bernard Postal and Lionel Koppman
(Fleet Press, $12.95; paperback, $6.95)

The Talmud enjoins those who would be rich to seek wealth in the north and those who would be wise to seek wisdom in the south. Postal and Koppman offer glimpses of some of those Jews who turned south—if not necessarily for wisdom's sake. To the South came Spanish and Portuguese Marranos, descendants of the secret Jews who had become "Christians" to escape religious persecution. And there were Indian traders like "Old Mordecai," first native-born resident of Montgomery, Alabama; itinerant peddlers named Goldwater, hauling provisions in Arizona; and dry-goods dealers along the Southeastern Seaboard.

Taos Valley reminds writer John Nichols of a brooding and violent sea.

The current volume, the second in a series, is, as the title advises, a guide to Judaica in the broadest sense. Historical points of interest, synagogues, kosher restaurants and portraits of famous Jews are listed for 15 states from Virginia to Arizona, plus Puerto Rico and the Virgin Islands, and, as a bonus, a brief history of Jews in each is given.

The history of Southern Jewry has not so much been neglected as overlooked. Jews were a very small minority whose experiences are easily lost in the rich material that the historian of the South has to deal with, while they were sufficiently isolated from the mainstream of Jewish life to be passed over by ethnic historians who focus on the large cities of the North.

Postal and Koppman cannot discern a distinctive Jewish character developing in the South. Indeed, they often find Jews but not Judaism. What then was the Southern Jew? He was a Southerner, and sometimes his vulnerability as a Jew made him a super-Southerner.

In state after state, for instance, the authors indicate the ambivalent attitude of antebellum Southern Jews toward slavery. While an Alabama judge and isolated individuals in small towns across the Cotton Belt might oppose slavery in principle, their stand on the issue did not differ in practice from fellow whites'.

The authors have filled the volume with anecdotes and vignettes, pocket biographies and a large store of fascinating trivia. "Navajo Sam" Dittenhoefer, a teamster in New Mexico, matches wits with Billy the Kid; Uriah Phillips Levy, the unconventional commodore, saves Jefferson's Monticello from ruin. The pirate Jean Lafitte claims in his autobiography to have had Jewish antecedents; Wyatt Earp is buried in a Jewish cemetery, his last wife having been a Jewish dance-hall hostess.

Inevitably, the Civil War takes center stage. Judah P. Benjamin, the Confederate Secretary of State and War whose Jewishness was more apparent to his enemies than it was to him, is ubiquitous. But we must also be grateful for learning about Max Frauenthal, the Confederate army private described by a comrade as "a little Jew who . . . had the heart of a lion" and whose name—in the patois of Texas—was once a synonym for a brave man. Rabbi James K. Gutheim in occupied New Orleans exhorts his congrega-

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tion to follow him into exile in Mobile rather than take the oath of allegiance to the United States. The Confederate Congress holds an inquiry into bribery by Jews that is aimed at discrediting Secretary Benjamin. Ulysses S. Grant issues Order No. 11, expelling Jews "as a class" from the Department of Tennessee: somehow we missed that in our textbooks.

The last volume in this series, now in preparation, should have a bibliography. Readers, for instance, will want to know more about Moses Elias Levy, a Moroccan Jew who made a fortune as a contractor for the Spanish army in Florida, and his son David, the first Jewish member of both the House of Representatives and the Senate—a fire-breathing defender of the "peculiar institution" who changed his name to Yulee and claimed that his father was in reality an Arab prince. Moses Elias acquired 60,000 virgin acres in northeastern Florida where he proposed to settle European Jews in a "Zion" and "substitute the law of Moses for common law and the Prophets for statute law." The project attracted 50 pioneers.

What would they think of that in today's Miami Beach, which reminds Israeli visitors of Tel Aviv and is, according to the authors, "more Jewish than New York"—even if it doesn't have a single kosher deli worth the noting?

*—Robert Rinehart*
Historian, Foreign Area Studies,
The American University

*The Big Red Train Ride*
Eric Newby
(St. Martin's Press, $10)

If there can be such a thing as a romp through Russia, this is it. The Trans-Siberian Railway is, in the author's words, *"the* big train ride. All the rest are peanuts." For those of us who will never make it to the Siberian steppes, and don't care to try, and for those who are determined to go, *The Big Red Train Ride* is an essential companion.

The only element in the book more boggling than the ride—nearly 5,900 miles across seven time zones in eight days—is how Eric Newby manages to maintain his good humor. Newby, nurtured by the tradition of distinguished English travel writers, has the qualities that make books of this kind distinctive. With keen perceptivity and wit, he conveys what he has seen, and what he has

On Red train, a formidable conductress.

missed, without judging. It is his eye, not his intellect, that leads you along, and the pictures he paints of the human comedy are worthy of Balzac and Daumier.

In the USSR, of course, it is what one does not see that really counts. The desperate attempts that Newby and his fellow travelers make to see the "real" Russia are, at once, hilarious and pathetic. Although the obduracy he encounters is no less arresting for being expected, Newby persists.

In an exchange with the first of a long line of Amazon conductresses, this characteristic colloquy takes place:

"Why no beer?" I asked Lilya.

"Because there is not enough beer in Russia."

"But why isn't there enough?"

"Because not enough is made."

Capable of deflecting this show of logical legerdemain, Newby is almost defeated by the rehearsed quality of visits to villages. Children stop playing as soon as their pictures have been taken, workers disappear after the apparat moves on; nothing *happens,* it simply *is.* After visiting a collective farm, Newby writes: "I began to experience the same sensations as an ageing monarch must . . . when he enters a room and the occupants either stand up or, if he has expressed a wish for an informal visit, continue with their poker work, leaving him nothing to say but 'Everything all right, eh?' "

Partly to compensate for the trip's lack of spontaneity, partly because he appears to be a natural iconoclast, Newby turns his setbacks into a carnival. Nothing escapes his lynx-eyed irreverence. While attempting to instruct the reader with unobtrusive bits about Russia's past, he develops several leitmotivs: for example, a comparative study of train and hotel lavatories, which serve as symbols of the Russian genius for making the simplest task difficult and unpleasant. A fast learner, Newby brings along a squash ball to use as a plug in every sink he washes in, speculating that somewhere in Russia there is a vile hoarder of waste plugs waiting to "ransom them back to the original owners."

Another recurrent theme is Eric Newby, bumbler, whose failed photographic and sightseeing opportunities should be endearingly familiar to all tourists. He confesses: "I happened to be trying to recover a piece of dropped sausage from the floor and therefore failed to catch a glimpse either of Bogozlov or the Church of St John. I also missed Lake Nero. . . ."

He still admires the "Trans-Sib," for all its faults. Its arrivals and departures are, to Newby, "as smooth as those of a hearse from Harrods." But, because his admiration for the train does not extend to the Russians or their countryside, one does come away with the feeling that this is a trip better read about than taken.

The book's dedicatory note is a kind of epitaph: "To the Peoples of Siberia, who have to live there."

*—Jill Merrill*
Free-lance writer and critic

*From the Ocean to the Sky*
Edmund Hillary
(The Viking Press, $12.95)

On May 29, 1953, Edmund Hillary, an indefatigable, 33-year-old New Zealander, thawed his frozen boots over a camp stove and clambered to the 29,028-foot roof of the world with Tenzing Norgay. They were the first conquerors of Mount Everest. Twenty-four years later Hillary, now Sir Edmund, was hauled down from an 18,000-foot camp on Nar Parbat on a sledge made from a tent, dangerously ill with high-altitude sickness.

The master of Everest, having reached what the Hindus he has come to know would call the fourth stage of his life—the time of ignoring the material world and seeking to draw closer to the Creator of the universe—has slowed down, but he hasn't slowed down much. He has never paid much heed to material success and he cares little for mystic enlightenment;

what he seeks is adventure, and his sense of it remains as keen as when he searched for the abominable snowman or led his 1958 overland trek to the South Pole. Excitement, variety, danger, he says, "what more could one ask than that?"

*From the Ocean to the Sky* is the story of an adventure that failed in one way, since Hillary collapsed in the Himalayan snows, but succeeded in another, since he guided his expedition for 1,500 miles up the sacred River Ganges to the flank of a 19,000-foot mountain which his son Peter managed to climb.

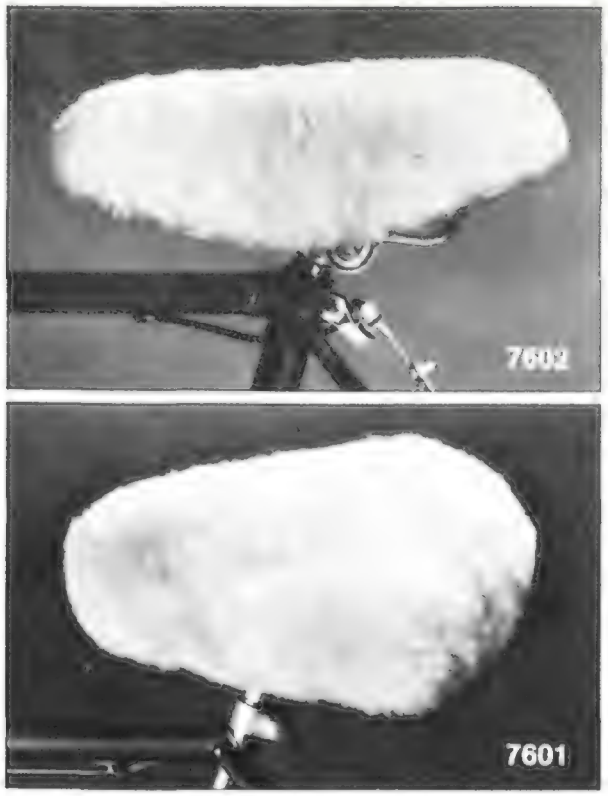
Sir Edmund tells us the trip was a pilgrimage he had dreamed of for five years, but it seems to have lacked the stuff of which epic journeys are made. The voyage up the river was made in fiber-glass jet boats powered by 250 hp V-8 engines, and while there were corpses floating in the water and challenging rapids to overcome, there was also a good deal of hokum as the team frolicked about for the cameramen filming the trip for television. The climb to the peak that was their ultimate destination was an anticlimax, dispensed with in 11 brisk paragraphs. And the mountain, Nar Parbat, was a compromise, an easier target than the one Hillary had planned; indeed, at one point an even simpler peak was suggested, partly because it had a scenic snow face "to make it look good" for the cameras.

But adventuring is difficult for an international celebrity, as Hillary learned to his discomfort. Wherever his boats took him on the Ganges he was practically swamped by admirers, many of them armed with autograph books.

North of Calcutta, police had to hold back a throng of 30,000 Bengalis. ("Some of them think they are going to see Mount Everest itself come down to the river," he was told.) Only on the mountain did the expedition find solitude.

Yet Hillary manages to make an entertaining tale of it all, with his digressions into India's perfumed history and his wonderment at the great river and the people—the villagers, the holy men and the pilgrims—of its banks. It was the reclusive gods of Nar Parbat who prevented him from completing his adventure, an Indian newspaper informed the disappointed mountaineer. There had been no gods on Everest.

—*David Lancashire*
*The Globe and Mail,* Toronto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# *Additional reading*

**Santa Monica Mountains** (p. 26)

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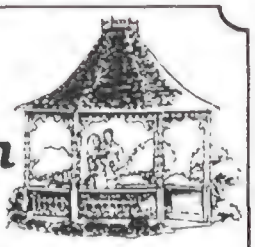

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Santa Cruz, California 95060

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*Crazy Contraptions* by Stan Bennett, The Low Tide Lumber Company (Ferndale, California), 1975

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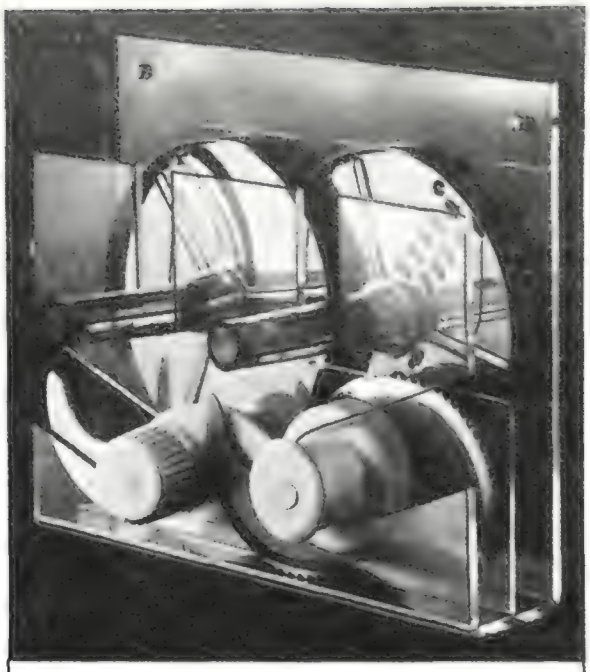

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The 1980 Smithsonian Engagement Calendar

The 1980 Smithsonian Engagement Calendar will bring *A Child's World* to every day of the year. This delightful appointment book captures children in their many moods—at school, at play, at home, and alone. The multi-faceted Smithsonian Collections have been used to illustrate children in many cultures and mediums from formal portraits to posters. Measuring 7 by 8 inches, the all color calendar makes an excellent gift for every busy person you know. Why not order several copies at the special $4.75 price that is available only to Smithsonian Associates ordering before September 1, 1979. Regularly sold for $5.95, the Members' Price after September 1 will be $5.35. Calendars will be mailed to you in August in plenty of time for the fall gift giving season. Calendar 539759 $5.95 (Members–$4.75) (s/h .60).

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# *Smithsonian highlights*

Fireworks, brass bands and the Stars and Stripes once again make headlines on the Mall. The Smithsonian's annual old-fashioned Fourth of July celebration will be in full swing at the National Museum of History and Technology, June 30 through July 4. Available at the museum is a complete schedule which describes a parade of activities from noon to 8:30 P.M. daily—plenty of fare to keep the most industrious patriot marching.

On hand to remind us of things American will be Uncle Sam, acrobats and clowns, famous orators, a barbershop quartet and a roving fife and drum corps. There will be demonstrations of Colonial crafts, a daily 12:30 P.M. showing in Carmichael Auditorium of *Meet Me in St. Louis*, a puppet show called "Colonial Connection" and a series of outdoor evening concerts—bluegrass, gospel, big band and jazz, 4-6 P.M. in the amphitheater.

Besides the traditional themes of Independence Day, this year's program will celebrate the many ethnic contributions to America. The public is invited to match wits at games such as chess, backgammon, nim, go, mahjong and tower of Hanoi (a game from India). In the evenings, 6:30 to 8:30, there's social dancing at the amphitheater with enough variety to keep anyone's dance card full. Nightly programs feature Latin American, Balkan, Mediterranean, Northern European, and English and American country dancing on the Fourth of July. Instructors will help with some of the unfamiliar routines.

Also planned for the Fourth itself is a parade, a reading of the Declaration of Independence (4 P.M., amphitheater) and a brass band concert. And then, of course, come the inevitable fireworks, presented by the National Park Service and the D.C. Recreation Department. The traditional display, calling forth ooohs and aaahs, begins on the Washington Monument grounds at dusk.

## Special July exhibits and events

**Air & Space Museum**

*Tenth Anniversary of Apollo 11* (July 16-24)—In the gallery with Apollo 11 Command Module *Columbia,* which returned the three astronauts from the Moon, the anniversary exhibit includes videotape of the first moon walk, photographs and other items. Apollo 11 astronauts will attend a public ceremony on July 20 at 11 A.M. That night, museum will remain open until 1:30 A.M. during replay of TV coverage of moon landing exactly ten years ago. Coffee and doughnuts.

*Star Maps* (July 7, 9 A.M.)—Monthly sky lecture will show how to "read" the July evening sky, Albert Einstein Spacearium; 8:45 arrival suggested.

*Worlds of Tomorrow*—Planetarium show in the Albert Einstein Spacearium, daily.

Children in Art: NCFA's *Polly* by George de Forest Brush

**Anacostia Neighborhood Museum**

*Out of Africa: From West African Kingdoms to Colonialization* (through 1979)—In conjunction with the exhibit, special July programs for children include demonstrations of Asafo African drummers and dancers, African music and instruments, tie-and-dye, batik, wood carving, mask making, body tattoos, African children's games and songs, young people's films. For schedule, call 202-381-6731.

**Arts & Industries Building**

*1876: A Centennial Exhibition*—As part of this exhibition, old-fashioned industrial machines run "off and on" from 10 A.M. to 4:30 P.M., including Norwalk steam engine, Otis steam elevator, Forsaith bandsaw and H. B. Smith power chisel mortiser.

**Cooper-Hewitt Museum (New York)**

*Immovable Objects Exhibition III, Urban Open Spaces* (through summer 1979)—Lectures, walking tours and on-site exhibitions of parks, playgrounds, streets, malls and other public places.

*Fantastic Illustration and Design in Britain 1850-1930* (through September 2).

*Alvar Aalto* (through September 12)—Buildings, furniture, lighting and decorative arts by this Finnish architect.

**Freer Gallery of Art**

*Chinese Paintings from the Ch'ing Dynasty* [1644-1912] (through December 15).

*Early Christian Manuscripts* (through November 15)—Selection of 11th- to 17th-century Armenian manuscripts.

*Japanese Lacquer* (through October 21).

**Hirshhorn Museum & Sculpture Garden**

*David Smith: The HM&SG Collection* (July 25-Oct. 28)—Features 26 sculptures, ranging from the artist's first work in welded metal to the geometric stainless steel compositions of the early Sixties.

*Alfred H. Maurer: The HM&SG Collection* (through August 12).

*Directions* (through September 3)—Sculptures, paintings, projects and video pieces by 18 artists reflect directions of contemporary American art.

**National Collection of Fine Arts**

*Childhood: Children in American Art* (July 4-September 16)—Paintings, prints, portraits, sculptures invoke the special world of the very young (see left).

*Koffler Collection* (through August 12)—Paintings, sculptures and works on paper, recently given to NCFA, represent some of the best Chicago artists.

*Western Arts* (through September 3)—Features works of 28 artists from 13 states.

**NCFA Traveling Exhibition**

*Contemporary Art from Alaska* (July 3-31)—Alaskaland Bear Gallery, Fairbanks.

**Museum of History & Technology (MHT)**

*July 4th Celebration* (June 30-July 4)—See above.

*Outdoor Jazz Concerts* (Wednesdays, July 11 through August)—The Commodores, the U.S. Navy band's jazz ensemble, presents concerts on the museum's Mall terrace, 6-7 P.M.

*Iron Bridge: 1779-1979* (through Labor Day)—See p. 58.

*Clocks from the James Arthur Collection*—Newly opened exhibit of rare European and American clocks from 16th to 19th centuries.

*Sportsmen of the Year* (until Labor Day)—Sports equipment from top U.S. athletes over the past 25 years.

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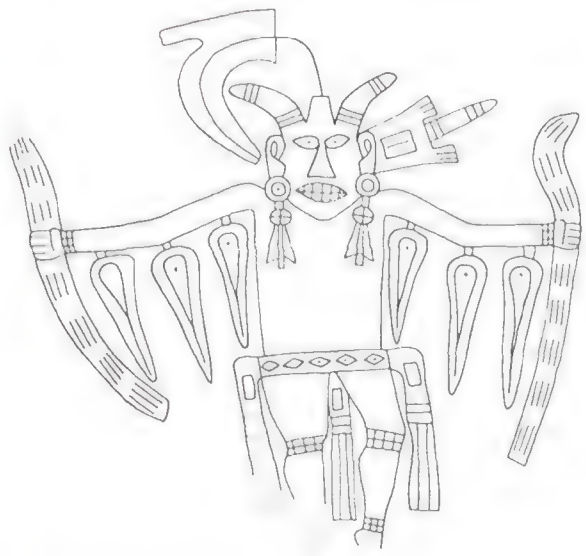
*Daum: 100 Years of Glass* (through August 26)—Early vases, Art Deco lamps and crystal, made by this Nancy, France, firm.
*Einstein: A Centenary Exhibition* (until April 1980).
*Ten Years of Sesame Street* (until Labor Day)—Big Bird comes to the Mall.

**Museum of Natural History (MNH)**
*Dynamics of Evolution*—Recently opened permanent hall uses dioramas, films and specimens to illustrate life processes.
*Spiro Graphics* (July 21-September 9)—Rubbings and drawings of designs engraved on shells found in a prehistoric Indian burial mound in Spiro, Oklahoma.



MNH's graphics from a shell

**National Portrait Gallery**
*Return to Albion: Americans in England 1760-1940* (through September 16).
*They Have Made a Nation* (through October 7)—Portrays colorful personalities from Confederate States of America.

**Renwick Gallery**
*Buildings Reborn: New Uses, Old Places* (through August 19).
*Child's Play* (through September 9)—Educational playthings such as "hip toys" which hang from the shoulders and "story sticks"—tongue depressors with pictures.
*Olaf Skoogfors, 20th-Century Goldsmith* (through August 19).

**Renwick Gallery Traveling Exhibition**
*Craft Multiples* (through August 15)—Huntington Galleries, Huntington, West Virginia.

**National Zoo**
*Puppets in the Park* (July 10-August 19)—Free puppet shows instruct children in zoo manners, also about birds, seals and hippos; daily except Mondays, 10 A.M.-4 P.M., Education Building.
*Films* (June 16-Sept. 2)—Continuous films on zoological topics, 10:30 A.M.-4:30 P.M., Education Building.
*Beaver Valley*—Recently transformed wooded ravine offers a look at the above- and below-water life of four species of aquatic mammals.

## Smithsonian events (tickets required) (202-381-5157)

**Arts & Industries Building**
*Archaesus Productions* (July 11-Sept. 3)—Innovative theater and mime for children in Discovery Theater, 11 A.M., 2 P.M. daily (202-381-5395).

**Hirshhorn Auditorium**
*Joseph Cornell: An Appreciation* (July 11, 8 P.M.)—Slide-illustrated lecture on the artist's collages, boxes and films by Lynda Hartigan, assistant curator at NCFA.

**MNH's Baird Auditorium**
*U.S. Manned Spaceflight Program* (July 2, 9, 16; 8 P.M.)—Color films commemorate tenth anniversary of moon landing and review 20 years of space flight research. Talks by members of NASM staff.
*Strange New Worlds of Jupiter* (July 10, 8 P.M.)—Illustrated lecture on the Voyager mission by geologist Dr. Robert Wolfe.
*Extraordinary Art of Benin* (July 18, 8 P.M.)—Illustrated talk by Valerie Fletcher, research assistant at HM&SG, on the iconography and techniques of Benin art.

## Membership benefits when visiting the Smithsonian

**The Associates Reception Desk,** in the castle, is open from 10 A.M. to 4 P.M. daily for registration, event-exhibit information, a special orientation publication and the Associates' *Guide to the Nation's Capital and the Smithsonian Institution.*

**The Associates Lounge,** a quiet place to relax in the castle, is open from 10 A.M. to 9 P.M. daily.

The Members' Dining Room, **"The Court,"** in the Museum of Natural History, is open Monday through Friday for breakfast (8:30-10 A.M.), for lunch (11 A.M.-3 P.M.) and for dinner (4:30-7 P.M.) and on weekends for breakfast (8:30-11 A.M.), for brunch (11 A.M.-3 P.M.) and for dinner (4:30-7 P.M.).

For pre-visit information packet, send a postcard or phone the Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-381-6264). Allow two weeks for receipt.

## Radio Smithsonian

This music-and-conversation program is broadcast weekly on approximately 50 stations across the country. For times, consult your local public-radio station:
*Henry Moore at 80* (week of July 1)—A comprehensive look at the work of the noted British sculptor who turned 80 last year. Guest is Abram Lerner, Director, HM&SG.
*Music Machines USA* (week of July 1)—

A sampling of mechanical music makers, from barrel organs to music boxes.

*The Many Sides of Jackson Pollock* (week of July 8)—A fresh look at this once-controversial painter.

*In Concert* (week of July 8)—Smithsonian Chamber Players perform music by Handel using authentic 18th-century instruments from the Smithsonian collection.

*What's in a Name?* (week of July 15)—The centuries-old controversy over naming the features of the moon, with Farouk El-Baz of NASM.

*Dear Dr. Freud . . .* (week of July 15)—Einstein-Freud correspondence and the light it sheds on Einstein's character, with Professor Peter Gay, Yale University.

*Out of Africa* (week of July 22)—The saga of Africans sold into slavery, the abolitionist movement and the founding of Liberia, as seen in an exhibit at the Anacostia Museum.

*Artist of Utopia Parkway* (week of July 22)—Tour of the new Joseph Cornell Study Center at the NCFA.

*Drama in the Depression* (week of July 29)—The energy and innovation of the Federal Theater Project, with John O'Connor, author.

*Abstracts in Metal* (week of July 29)—Abstract expressionist sculptor Seymour Lipton talks about his art.

### Contributing Memberships

Contributing Members of the Smithsonian Associates support the Institution's work in education, research and scholarship. Membership categories are supporting, $50; donor, $100; and sustaining, $500 (all tax-deductible within the limits of the law). Among special privileges offered are illustrated exhibition publications and invitations to selected previews. National contributing members receive advance notice and illustrated publications about SITES (below) and complimentary tickets for Regional Program activities in their areas. For more information, write Contributing Membership Program, A&I Building 1208, Smithsonian Institution, Washington, D.C. 20560.

### Smithsonian Galaxy

These new, 2½-minute, twice-a-week features probing the worlds of natural science, the arts, history and air-and-space exploration are now available, free of charge, to radio stations across the nation. If interested in hearing them, notify your local radio station. For information, write this program care of Office of Telecommunications, A&I 2472, Smithsonian Institution, Washington, D.C. 20560.

### Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington, D.C. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some July openings:

**Phoenix** (July 30-August 20)—*Crosscurrents: Neoclassical Drawings-Prints from the Cooper-Hewitt Museum,* Phoenix Art Museum.

**St. Louis** (July 21-August 19)—*Polish Posters,* Cemrel, Inc.

**Cincinnati** (July 28-August 26)—*The Art of Scientific Illustration,* Cincinnati Museum of Natural History.

**Memphis** (July 14-August 26)—*The Phillips Collection in the Making: 1920-1930,* Brooks Memorial Art Gallery.

**Memphis** (July 7-August 19)—*Patterns and Sources of Navajo Weaving,* Pink Palace Museum.

**Wheeling, West Virginia** (July 14-August 12)—*American Drawings II,* Stifel Fine Arts Center.

**San Antonio** (July 14-August 26)—*George Grosz: Works in Oil,* San Antonio Memorial Museum Association.

**Park City, Utah** (July 14-August 12)—*Birds of Prey: Paintings by Louis Agassiz Fuertes,* Kimball Art Center.

**Milwaukee** (July 21-August 19)—*Black Women: Achievements Against the Odds,* Milwaukee Public Library.

**Washington, D.C.** (July 21-September 2)—*Close Observation: Selected Oil Sketches by Frederic E. Church,* Corcoran Gallery of Art.

**Orlando, Florida** (July 14-August 12)—*Paper as Medium,* Loch Haven Art Center, Inc.

**Albany, Georgia** (July 28-August 26)—*Portrait of America,* Banks Haley Gallery.

**Elkart, Indiana** (July 14-August 12)—*Handicrafts of the Southeast,* Midwest Museum of American Art.

**Holmdel, New Jersey** (July 21-August 19)—*Black Women: Achievements Against the Odds,* Bell Laboratories.

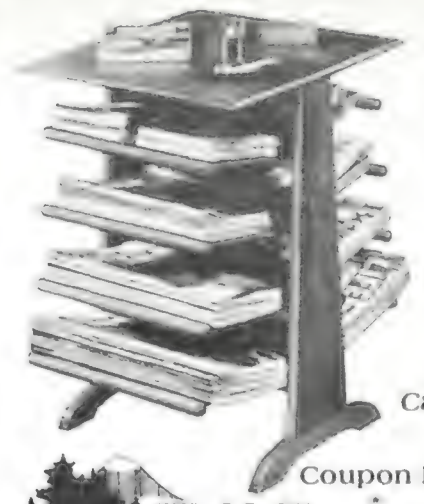
**Stillwater, Oklahoma** (July 1-July 30)—*Bridges: The Spans of North America,* Oklahoma State University.

**Columbia, South Carolina** (July 21-August 19)—*American Eagle: Symbol for Survival,* Woodhill Mall.

**Alpena, Michigan** (July 7-August 5)—*Exhibition Flight,* Jesse Besser Museum.

**Somerset, Pennsylvania** (July 7-August 5)—*Ride On!* Laurel Arts.

**Boulder, Colorado** (July 7-August 5)—*Ride On!* First National Bank.

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# Travel and Study, at Home, Abroad . . . and

*For both the seasoned and would-be traveler, the Smithsonian has developed a travel program to meet a variety of tastes and budgets. In order to accommodate the increasing growth and interests of Smithsonian Associates, the tour programs have expanded, bringing travelers to places reflecting the Institution's interests.*

## Domestic Study Tours

**Desolation and Gray Canyons**—July 22-August 1, September 30-October 10, or October 11-21: White-water trip for the adventurous; explore geology, wildlife and exciting Indian and outlaw history of Green River in Utah.

**Alaska**—July 29-August 7: Wilderness retreat at Camp Denali introduces natural wonders of Mt. McKinley Park.

**Nova Scotia**—August 31-September 10: Trace the rich history and cultures of this ruggedly beautiful Maritime Province.

**Bryce, Zion and North Rim**—September 13-21: Enjoy hiking in Utah's magnificent canyons to study geology and natural history of the Southwest's spectacular scenery.

**Toronto**—September 18-24: The city's art and architecture; and visits to the Stratford Shakespeare Festival and Niagara Falls.

**California Wine Country**—September 30-October 6: Learn to select, evaluate and enjoy California's wines by visiting vineyards with distinguished winemasters.

**Archaeological Dig**—October 6-13: Join archaeologists in an actual dig, supplemented by instruction, lectures, laboratory work and field trips in Illinois.

**Smithsonian Sampler Weekend**—October 12-14 or October 26-28: Bring the family for behind-the-scenes tours of specially selected museums with Smithsonian curators and staff.

**Asheville, North Carolina**—October 19-22: Visit Biltmore, famous Vanderbilt estate, Carl Sandburg's house and other historic homes in this mountain resort during peak of fall foliage.

**Florida Keys**—October 28-November 4: Explore coral reefs, tide pools and sponge beds with staff at Newfound Harbor Marine Institute on Big Pine Key.

**National Air & Space Museum**—November 16-18: Curators and staff lead a behind-the-scenes tour of this popular museum and Silver Hill, the restoration and storage facility.

**Antiques in Atlanta**—November 29-December 2: Program of lectures and field trips on antiques and decorative arts in conjunction with High Museum's annual antiques show.

**Washington "Anytime" Weekend:** Choose any weekend to visit your choice of Smithsonian museums, spend two nights at Loew's L'Enfant Plaza Hotel or Hyatt Regency Washington, each close to the Mall, and see other sights in the city by Tourmobile. Reservations and payments must be received by the Smithsonian Institution at least ten days prior to arrival.

## Foreign Study Tours

**Copenhagen to Lisbon**—August 17-September 3: Cruise on MTS *Argonaut;* transit the Kiel and North Sea canals; sail up the Seine, Loire, Gironde rivers, with special visits to northern Spain and Portugal.

**Nile Cruise**—November 19-December 8: Fly to London and visit British Museum's Egyptian Collection with staff members before continuing on to Cairo. Spend two weeks aboard the M.S. *Delta* cruising up the Nile from Cairo to Aswan, enjoying scenes of daily life along riverbanks and visits to Sakkara, Memphis, El Amarna, Abydos, Dendera, Karnak, Luxor, Valley of the Kings, Edfu, Esna and Kom Ombo. Optional flight to Abu Simbel before returning to States.

## Foreign Charter Tours

**Scotland***—September 9-23: Edinburgh and beyond—a program of walking tours and special visits in this historic city; visits to castles, abbeys, battlefields and archaeological sites, plus incomparable scenery of rugged mountain glens and rolling hillsides.

**Sultans' Treasures***—September 23-October 7: A sampling of Turkey's rich and varied heritage. A five-day program in Istanbul with sightseeing, museum seminars and a visit with a Turkish family followed by excursions to Aegean Turkey or Anatolia. Concludes in Ankara—Turkey's modern capital.

**Spain***—September 30-October 14: Enjoy the cosmopolitan atmosphere of Madrid for a week of walking tours, museum visits and excursions to historic sites in New Castile. Then sample one of three travel seminars to Santiago, Barcelona or Andalusia for exploration of its history, architecture and way of life.

**Japan**—October 21-November 6: The heart of historic Japan with extended program in Kyoto and Nara followed by choice of travel to Inland Sea or Sea of Japan. Program concludes in Tokyo with visits to Nikko or Kamakura. (Originates and ends in Seattle.)

**Guatemala**—October 31-November 11, November 21-December 2, January 23-February 3, or February 20-March 2: In the company of an archaeologist, visit Tikal, monumental Mayan city of Petén jungle; Copán, Mayan site deep in Honduras; plus Mayan ruins of Quiriguá, El Baúl, Democracia. (Tour originates and ends in Guatemala City.)

**Mayan Mexico: The Yucatán Peninsula**—November 11-23, December 5-17, January 8-20; or February 5-17: A complete tour of unique Mayan ruins of the Yucatán. (Tour originates and ends in Mérida.)

**New Zealand**—November 21-December 7 or February 20-March 7: Tour includes Mt. Cook, Te Anau and Milford Sound, plus Auckland, Rotorua, Wellington and Christchurch; also talks on natural history, the Maori heritage, parliament and home visit. (Tour originates and ends in Los Angeles.)

**Winter Russia***—December 28-January 11: Includes the historic and diverse cities of Leningrad, Tallinn and Moscow plus optional two-day excursion to Vladimir and Suzdal; attend special festivities including gala New Year's Eve party and a traditional troika ride; life-seeing visits to schools, factories or clinics; attend the Russian theater and circus.

Low-cost tours include first-class hotels, most meals, sightseeing, lectures, theater tickets, air fare. *Indicates optional predeparture course will be available.

Write Associates Travel for trip brochures: A&I 1278, Smithsonian, Washington, D.C. 20560 or call (202) 381-5635.

# in Washington

## Selected Studies Seminars

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**Man's Quest for Wings**—Sept. 30-Oct. 5: Experts at the National Air and Space Museum highlight achievements and triumphs in the wondrous history of flight. Includes a day's visit at the renowned preservation, restoration and storage facility at Silver Hill to view the finest and most varied collection of airplanes, spacecraft and memorabilia in the world.

**Historic House Preservation**—Nov. 4-9: Preservation authorities share their special "know-how" to help with the challenges of restoration. Participants visit numerous projects successfully completed and underway, including lovely urban houses and country estates.

**Aircraft Restoration: How To**—Sept. 9-13: Internationally known craftsmen of Silver Hill, who have re-created many masterpieces of aviation in the preeminent National Air and Space Museum, offer workshops on the many various techniques used.

**Genealogical Research**—Sept. 30-Oct. 5: (Repeat of popular program).

**American Antique Furniture**—Oct. 14-19: Dealing with the appreciation of antiques, 1650-1840.

**Arts of Imperial Russia**—Oct. 24-28: Visits to Hillwood Museum and the special exhibition at the Smithsonian of paintings from major Soviet museums.

**China: A Cultural History**—Oct. 28-Nov. 2: Prehistory to the enigmas of today, with emphasis on intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the outstanding collection of the Freer Gallery of Art.

**Please send requests for full information on content, accommodations and fees by seminar title to Selected Studies, A & I 1190A, Smithsonian Institution, Washington, D.C. 20560 or telephone (202) 381-6434 for details.**


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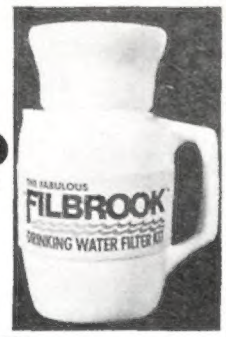


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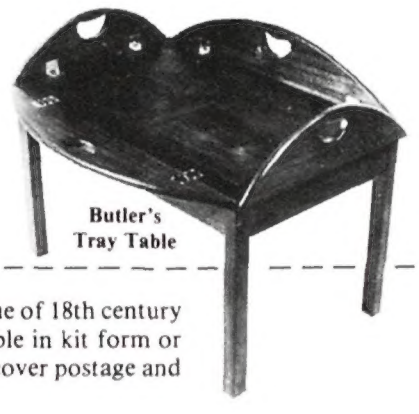

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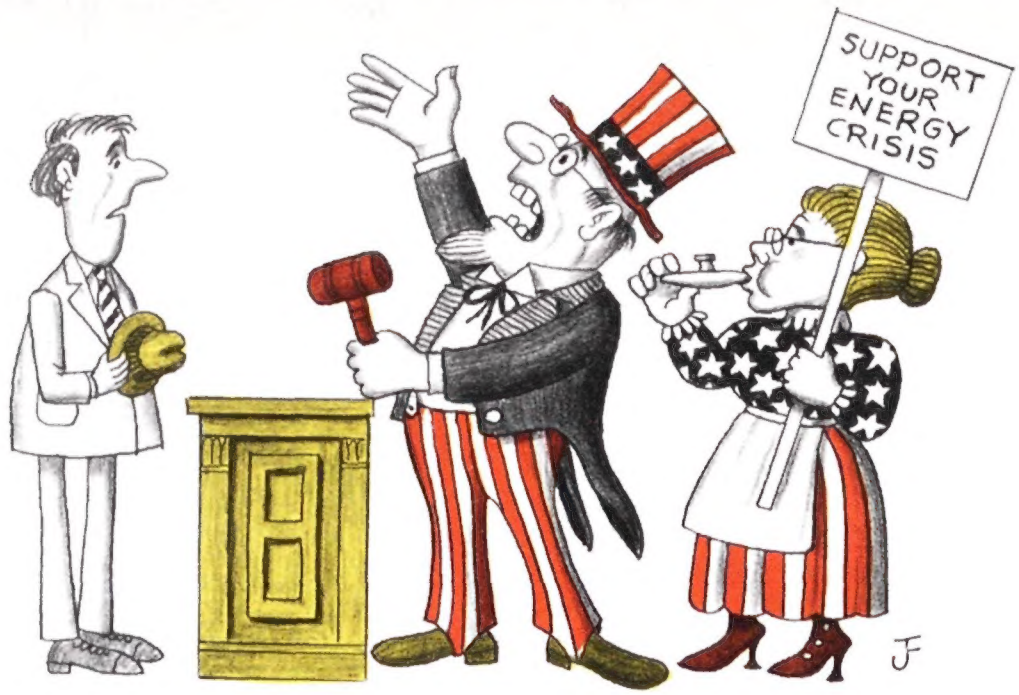
*By David Snell*

# *For the court Caruso, justice is easy as pi*




Couple days ago, a stranger who I hadn't never saw before stoppd me as I was coming out of Tiny's Barber Shop & ast would I kindly mind telling him where-bounce in Polksville was the Courthouse at. He said he needed to get aholt of Judge W. P. Spillage.

So I told him we didn't have no Courthouse. And I exclaimed that if he needed to pay a speeding fine for driving in X.S. of the 15 mile a hour limit &/or plead guilty to something or another, he'd need go out Main St. a ways, to the Judge's old ram shackly Judicial Residence. I told him he couldn't hardly miss it, on acct. of its got this big red neon Justice of the Peace sign out in the front that stays lit up night & day + a hand painted wooden 1 that says "Consummation of Marriages a Specialty."

Then I thought of another piece of advise the stranger should ought to have before he goes up against the Honorary W. P. Spillage. It had to do with how the Judge tends to favor musical jurisprudence. Which is how come he's often referred to as the Singing Jurist &/or the Courtroom Caruso.

So I exclaimed how it works. Irregardless of what type of criminal ofence you get hauled in on, the very 2nd you come through the door the Judge tells you to set over on a wooden bench that's marked "Reserved for Miscreants Only." Then, for approx. the next 2½ hrs. you get learnt the errer of your sinfull ways by having good old timey Gospel hynms, a lots of which are of the judge's own composition, sang at you by His Honorship. At point blank range. With his Mrs. doing a companyment on her kazoo.

Then finely, when the Judge decides you have did enough pennants, he lets you sign a guilty plea & pay a whopping fine & be on your way.

Well, at this point the stranger kind of grins & says he wasn't guilty of nothing but being a mathamatical perfesser at some college up East. Any how, he said the reason why he come to Polksville was he wanted to see with his own 2 eyes the Judge that has handed down the most earth-shaken court decision in history.

So I said it kind of figures, as Judge Spillage is always handing down such rulings on various & Sunday things, & he's not even a ordained lawyer.

I give him a real good run down. I mention how on the 4th of July the Judge puts on a Uncle Sam suit to hold court in, in order so the miscreants can be reminded of our Foundling Fathers, & that he hit on the idea 3 years ago while observing the nation's 200th Bicentennial.

And I told how he puts on a 2 hr. program of Gospel music ever Sunday afternoon over the C-B radio, & how he fines the living daylights out of the truckers if they butt in & say "Breaker one nine," providing of course the deputies can figure out who done it and can catch them.

And to give another for-instants of the Judge's many good deeds and his sense of civic mindlessness I told about all them so-call "public service" postage cards the Judge sends out, with words of home spunned wisdom printed on them.

And like how a lots of his postage cards tell interesting antidotes. Like his stirring acct. of Teddy Roosevelt & the Rough Raiders charging down San Juan Hill hollering out, "Remember the Titanic."

And how the Judge is always telling folks they ought to support the Energy Crisis, and how we oughtn't be shipping all that oil to the Saudi Iranians who don't need it any way, on acct. of they drive camels.

By & by I ast the perfesser which earth-shaken court decision among the many did he want to talk to the Judge in re. So he hauled out a Zeerocks copy he had got aholt of, of a article that ran in our Polksville *Clarion-Epitome* a while back. I didn't realize at the time that it was setting a legal president:

## A LANDMARK COURT DECISION

**In a judicial decree aimed at streamlining the teaching of geometry to local high school students, Justice of the Peace W. P. Spillage has ruled that pi is an even 4 instead of 3.141592.**

It turns out that Judge Spillage had felt real pitiful for his daughter Vi-Ella when she was trying to learn to speak algeber in high school and the thing holding up the works was this pi which made it real hard for her to do long division.

And so the Judge done hauled off & changed pi to a even 4. Just like that.

And he made it clear that any teachers at the high school who was too old fashion to swing over to the new pi might find theirself held in contempt of court.

The perfesser said he guest he better be shoving off to the Judicial Residence, & off he shoved.

Let me ast you this. Don't you think it was big of him to come all this way to thank Judge Spillage on be½ of all his feller perfessers? I sure do. I mean, he couldn't of helped being a little jealous for not thinking of the idea his own self. Like Judge Spillage said in his court order, they's more than 1 way to slice pi.

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